PATENT ABSTRACTS OF JAPAN

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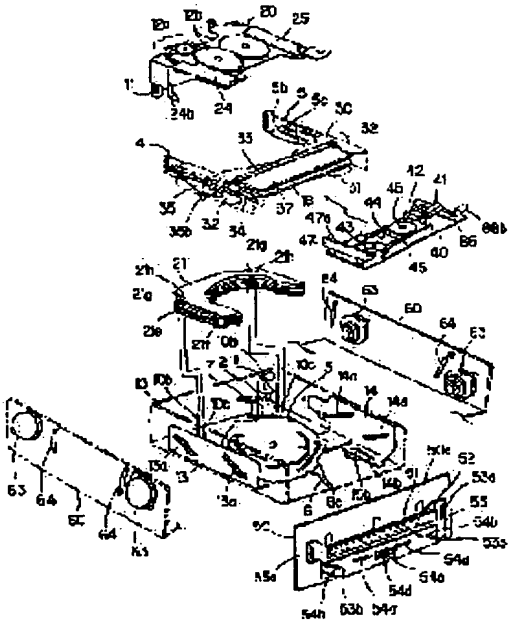
(54) DISK REPRODUCING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a disk reproducing device which is capable of executing the operation of respective component parts meeting the disks to be reproduced at adequate timing with a small-sized and simple structure and has high operation reliability and operability.

SOLUTION: A lower chassis unit 10 is provided with plural laminated disk holders 21. A stage unit 30 is provided with side selection plates 4 and 5 for selectively lifting the disk holders 21, a drive base unit 40 for reproducing the disks, a gear mechanism 32 for horizontal drive for inserting the drive base unit 40 into the space generated by the lifting of the disk holders 21 and a loading roller 33 for inserting and discharging the disks. The stage unit 30 is disposed liftably according to the disk holders 21 selected via a first motor disposed at the lower chassis unit 10, a gear mechanism 2, a mode plate 3 and slide plates 13 and 14.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The disk insertion section which carries out insert/eject of the disk, and two or more disk holders which hold two or more disks according to an individual, While choosing a desired disk holder out of the disk holder by which two or more laminatings were carried out to the drive base unit which plays the disk held at the desired disk holder A disk holder rise-and-fall means to go up and down said all or a part of disk holder, and to form the space which can insert a drive base unit, The drive conveyance means to which said drive base unit is moved between the space formed of rise and fall of said disk holder, and the space by the side of said disk insertion section, While drawing the disk inserted from said disk insertion section and making maintenance possible at said disk holder In the disk regenerative apparatus equipped with a disk insert/eject means to discharge a disk in a receipt and said disk insertion section, from said disk holder The disk regenerative apparatus characterized by having the stage unit which supports said disk holder rise-and-fall means and said drive base unit, and a stage rise-and-fall means to make it go up and down said stage unit according to the location of the selected disk holder.
[Claim 2] Said disk insert/eject means is a disk regenerative apparatus according to claim 1 characterized by being prepared in said disk insertion section side in said drive base unit.
[Claim 3] It is the disk regenerative apparatus according to claim 1 or 2 characterized by preparing the follower which said disk holder rise-and-fall means has the cam member equipped with the sloping cam side, and said cam member is prepared in a disk insert/eject direction movable at said drive base unit, contacts the cam side of said cam member at said each disk holder, and is energized by migration of said cam member at either [at least] the upper part or a lower part.
[Claim 4] The cam side in said cam member is a disk regenerative apparatus according to claim 3 characterized by having a stair-like part corresponding to the rise-and-fall location of said disk holder.
[Claim 5] The disk regenerative apparatus according to claim 3 or 4 characterized by continuing and preparing the guidance cam which it shows to the follower of the disk holder concerned in said cam side until the disk held at the disk holder chosen as said cam member according to the migration moves to a refreshable location in said drive base unit.
[Claim 6] A disk regenerative apparatus given in any 1 term of claims 3-5 characterized by establishing the sub cam side parallel to said cam side on both sides of the follower of said disk holder in said cam side and the location which counters at said cam member.
[Claim 7] Near said disk insert/eject means in said stage unit A stock arm is prepared rotatable. Said stock arm It has the press section which pushes in the disk inserted from said disk insertion section to the back of a disk holder by the rotation. To said stage unit It is a disk regenerative apparatus given in any 1 term of claims 1-6 which the energization means which energizes said stock arm and is rotated in the disk pushing direction is formed in a disk insert/eject direction movable, and are characterized by said energization means having the elastic member which adjusts the energization force.
[Claim 8] A disk regenerative apparatus given in any 1 term of claims 1-7 characterized by having the positioning supporter which supports the positioning member of the disk holder which the positioning

member was prepared and was chosen near said De Dis holder at the time of disk insert/eject in said disk holder.
[Claim 9] A disk regenerative apparatus given in any 1 term of claims 1-8 characterized by two disk detecting elements being larger than the diameter of 8cm disk, and preparing them in the disk insertion section side near said disk insert/eject means at spacing narrower than the diameter of 12cm disk.
[Claim 10] Said disk insert/eject means has the loading roller and follower roller to which a disk is pinched and moved from the upper and lower sides. To said disk insertion section side near [said] the loading roller The upper disk guide and ROWA disk guide which guide migration of a disk from the upper and lower sides are prepared. Said follower roller While being prepared in the direction which attaches and detaches on said loading roller movable It is a disk regenerative apparatus given in any 1 term of claims 1-9 which are energized in the direction stuck to said loading roller by pressure by the elastic member, and are characterized by carrying out engagement support of the edge of said upper disk guide or said ROWA disk guide at the shank of said follower roller.
[Claim 11] A disk regenerative apparatus given in any 1 term of claims 1-10 characterized by preparing the side disk guide which guides migration of a disk from right and left in the disk holder side near said disk insert/eject means.
[Claim 12] The turntable unit in which the disk which reproduces said drive base unit is laid, The spindle motor made to rotate said turntable unit and a chucking means to hold a disk on said turntable unit, By migration by the side of said turntable of the pickup unit which detects the signal recorded on the disk according to migration in the direction of a path of a disk, and said pickup unit A chucking discharge means to cancel the disk maintenance by said chucking means, A disk regenerative apparatus given in any 1 term of claims 1-11 characterized by having a location detection means to detect that said pickup unit is in an initial valve position and a chucking discharge location.
[Claim 13] It is a disk regenerative apparatus given in any 1 term of claims 1-12 characterized by for said drive base unit having the rack section, having at least two drive gears to which said drive conveyance means engages and releases said rack section, and said drive base unit is moved, and spacing of said drive gears being shorter than the die length of said rack section.
[Claim 14] Said disk holder is a disk regenerative apparatus given in any 1 term of claims 1-13 which have a wrap diaphragm for a part of disk top face, respectively, and are characterized by forming slitting of magnitude which avoids the projection part of the adapter for 8cm disks at the disk bore side in said diaphragm.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention pulls out a disk from one of two or more of the disk holders by which the laminating was carried out, it carries out chucking to a drive base unit, it relates to the disk regenerative apparatus constituted so that a disk might be played, and is especially set at the time of disk playback. Instead of carrying out level actuation of two or more disk holders, space is formed using rise-and-fall actuation, and it is related with development of the disk regenerative apparatus which a drive base unit is inserted there and can play a disk.
[0002]
[Description of the Prior Art] Conventionally, two or more disks are contained at a magazine, and the disk regenerative apparatus of the type constituted so that the disk chosen from two or more of these disks could be played automatically has spread widely. In this type of disk regenerative apparatus, the autochanger style for choosing automatically the disk used as the candidate for conveyance / playback based on the disk selection command inputted by a manual operation button, remote control, etc. or the program set up beforehand is prepared.
[0003] Moreover, while it had been positioned by it with the disk holder of dedication, on a drive base unit, level conveyance of the disk which maintenance of the disk within a magazine was generally performed according to the individual by the disk holder of the dedication according to the path of a disk, and was chosen by the autochanger style is carried out, and it is played. In addition, the drive base unit is prepared possible [rise and fall], and before a disk is pulled out, it moves to the height according to the selected disk.
[0004] being such -- a disk -- a regenerative apparatus -- a magazine -- containing -- having had -- plurality -- a disk -- a disk -- insertion - discharge -- actuation -- carrying out -- the need -- nothing -- a disk -- selection -- carrying out -- only -- as it is -- automatic -- being reproducible -- a point -- operability -- excelling -- **** . When it is going to play the disk which is not contained by the magazine on the other hand, attachment-and-detachment actuation of a magazine is needed, and it takes time and effort extremely. When playing only two or more disks again contained in the original magazine after playing only one disk which is not especially contained by the magazine, an operator has to do the activity which time and effort requires very much, in order to play the disk of one sheet.
[0005] When it is easy to enlarge equipment according to the number of sheets of a disk and the equipment dimension is limited like the disk unit for mount, there is also a trouble that the number of sheets of the disk which can be contained in a magazine will decrease in the disk regenerative apparatus which, on the other hand, used the magazine of such an attachment-and-detachment mold. This point is explained below.
[0006] First, since reinforcement sufficient when taken out outside, in order to protect two or more disks which it holds for the magazine detached and attached to equipment is required, the wall of the body of a magazine becomes quite thick, consequently a magazine enlarges it. Moreover, in order to perform horizontal migration of a disk holder, the slot and the rail section for a guide are prepared in the inside of

a magazine side attachment wall. Since spacing between adjoining disk holders will also become large while the thickness of a magazine side attachment wall increases further if such a slot and the rail section are formed, the height dimension of a magazine increases.
[0007] Furthermore, in order to pull out a disk in the case of playback of the disk contained by the magazine, it is necessary to prepare a sufficient room in one [at least] front-face side of a disk. If such space is beforehand established in a magazine, according to the number of sheets of a disk, the height of a magazine will become high. Moreover, when the height dimension is limited like the disk unit for mount, the number of sheets of the disk which can be contained in a magazine will decrease.
[0008] While containing automatically recently the disk which incorporated two or more disk holders in the state of the laminating in equipment, without using the magazine of an attachment-and-detachment mold, and was inserted from disk insertion opening to this disk holder from such a situation, development of the disk regenerative apparatus which can discharge the contained disk automatically is furthered.
[0009] According to such a disk regenerative apparatus, an operator can exchange disks easily by making discharge actuation and insertion actuation of a disk perform automatically. That is, after removing push and the discharged disk for the manual operation button and key which are an object for discharge, a disk is exchangeable without the need of detaching and attaching a magazine, only by inserting the following disk in disk insertion opening. Furthermore, the whole equipment can be miniaturized compared with the case where a magazine is used.
[0010]
[Problem(s) to be Solved by the Invention] However, as mentioned above, two or more disk holders are built in in the state of a laminating, and when only carrying out both-way actuation of the disk holder horizontally as usual in developing the disk regenerative apparatus which can carry out insert/eject of the disk automatically to this disk holder (it is hereafter called a level round trip actuation method), the dimension of equipment cannot fully be reduced.
[0011] That is, since it is necessary to return the disk holder advanced to the position on a drive base unit to the initial valve position which does not influence disk playback to position the disk to a drive base unit top with the disk holder of a level round trip actuation method, for the center to center of the disk in a stowed position, and the disk on a drive base unit, the distance beyond the radius of a disk will be needed at least, and, only in the part, the horizontal dimension of equipment will become large at it. Moreover, since it is necessary to secure a certain amount of [respectively] spacing from the slot and the rail section for a guide being prepared in order to perform level round trip actuation of a disk holder between adjoining disk holders, it is difficult to reduce the height dimension of the whole disk holder.
[0012] Space is formed by making one side of the selected disk holder into a separation location to the disk holder of such a level round trip actuation method using rise-and-fall actuation of the disk holder of one side of this separation location, or both sides, and adoption of the method (it is hereafter called a laminating and a separation actuation method) which inserts a drive base unit there and plays a disk is also considered. A horizontal dimension can be made into min, without considering actuation of only a disk holder, increasing the height dimension of the operating range of a disk holder at least compared with the case where a level round trip actuation method is adopted, when such a laminating and a separation actuation method are adopted. This point is explained briefly.
[0013] First, when a laminating and a separation actuation method are adopted, according to an initial state, contiguity arrangement of the whole disk holder can be carried out in the form where between adjoining disk holders is approached or contacted. Moreover, space will be formed only in any one internal and external place of two or more disk holders by going up and down the whole disk holder in one at the time of disk playback, or dissociating by one place, and although this space is larger than spacing between the disk holders with which it adjoins in the case of a level round trip actuation method, it will be equivalent extent if compared with the sum total of those spacing.
[0014] Moreover, level round trip actuation is made performed to a drive base unit instead of not operating a disk holder horizontally, when a laminating and a separation actuation method are adopted. In this case, the disk playback location of the drive base unit which can be set horizontally can be set as

the location of the arbitration which laps with a disk holder, and if a drive base unit is moved out of range [that path of operation] only at the time of rise-and-fall actuation of a disk holder, it can make the horizontal dimension of equipment min by coming out enough and minimizing the dimension of a drive base unit for a certain reason.

[0015] However, when the above laminating and separation actuation methods are adopted, it is necessary to go up and down a disk holder simply, but to change separation actuation of the whole disk holder a top [need / the separation location which forms space / to be chosen] according to a separation location. Thus, from the need of making complicated actuation performing to a disk holder, it is easy to complicate the drive configuration of a disk holder. Moreover, about a drive base unit, since not only rise-and-fall actuation but level actuation is needed, the actuation is also complicated and a drive configuration tends to complicate it. Furthermore, it is difficult to adjust appropriately the timing of the whole mechanism containing the disk holder which performs such complicated actuation, or a drive base unit of operation.

[0016] It is proposed in order that this invention may solve the trouble of the above conventional techniques. The 1st purpose Though it is a disk holder laminating and a separation actuation method, according to small and simple structure Selection and separation of a disk holder of a separation location according to the disk which it is going to play, Adjustment of the height of a drive base unit, insertion of the drive base unit into the space formed of this separation, It is possible to suitable timing to operate disk chucking etc. good, and it is offering the high disk regenerative apparatus of operational reliability and operability.

[0017] Especially the 2nd purpose of this invention is small and simple to extent which can be carried in the location of the arbitration of a car, and is offering a disk regenerative apparatus suitable as ambulance or vehicle equipment.

[0018]

[Means for Solving the Problem] In order to attain the above purposes, this invention The disk insertion section which carries out insert/eject of the disk, and two or more disk holders which hold two or more disks according to an individual, While choosing a desired disk holder out of the disk holder by which two or more laminatings were carried out to the drive base unit which plays the disk held at the desired disk holder A disk holder rise-and-fall means to go up and down said all or a part of disk holder, and to form the space which can insert a drive base unit, The drive conveyance means to which said drive base unit is moved between the space formed of rise and fall of said disk holder, and the space by the side of said disk insertion section, While drawing the disk inserted from said disk insertion section and making maintenance possible at said disk holder In the disk regenerative apparatus equipped with a disk insert/eject means to discharge a disk in a receipt and said disk insertion section, it has the following technical features from said disk holder.

[0019] That is, invention according to claim 1 is characterized by having the stage unit which supports said disk holder rise-and-fall means and said drive base unit, and a stage rise-and-fall means to make it go up and down said stage unit according to the location of the selected disk holder. In the above invention according to claim 1, since the drive base unit is supported by the stage unit with the disk holder rise-and-fall means, only rise and fall of the stage unit by the stage rise-and-fall means can perform at once the insertion point arrangement of selection of a disk holder and a drive base unit which makes it go up and down. Therefore, though it is a simple configuration, alignment of a mechanism can be made exact and timing of operation can be determined appropriately.

[0020] Invention according to claim 2 is characterized by forming said disk insert/eject means in said disk insertion section side in said drive base unit in a disk regenerative apparatus according to claim 1. Although it is necessary to make it go up and down a disk holder, to choose the disk holder which carries out insert/eject of the disk, and to carry out alignment to a disk insert/eject means with a disk holder rise-and-fall means in the above invention according to claim 2 at the time of disk insert/eject, since both the disk holder rise-and-fall means and the disk insert/eject means are formed in the stage unit, alignment following selection of a disk holder can be performed correctly and easily, and operational reliability increases.

[0021] Invention according to claim 3 is set to a disk regenerative apparatus according to claim 1 or 2. Said disk holder rise-and-fall means It has the cam member equipped with the sloping cam side. Said cam member It is characterized by preparing the follower which is prepared in a disk insert/eject direction movable, contacts the cam side of said cam member at said each disk holder, and is energized by migration of said cam member in at least the upper part or a lower part either in said drive base unit. In the above invention according to claim 3, since you make it go up and down a disk holder by moving the sloping cam side to a disk insert/eject direction, the migration stroke of a cam member required in order to go up or drop a disk holder can be shortened. Therefore, the die length of the disk insert/eject direction of a mechanism becomes short, and equipment is miniaturized.
[0022] It is characterized by invention according to claim 4 having a stair-like part corresponding to the rise-and-fall location of said disk holder in the cam side in said cam member in a disk regenerative apparatus according to claim 3. in the above invention according to claim 4, by each stage of a stair-like part, since a disk holder can be certainly held to a position, a disk holder carries out location appearance and precision improves.
[0023] In a disk regenerative apparatus according to claim 3 or 4, invention according to claim 5 is characterized by continuing and preparing the guidance cam which it shows to the follower of the disk holder concerned in said cam side until the disk held at the disk holder chosen as said cam member according to the migration moves to a refreshable location in said drive base unit. In the above invention according to claim 5, separation of a disk holder and not only insert/eject positioning of a disk holder but positioning of a up to [the drive base unit of the disk to play] can also be performed by moving a cam member to a disk insert/eject direction, and making it go up and down a disk holder. Therefore, one cam member will make many functions serve a double purpose, a configuration member decreases, and a device is miniaturized and simplified.
[0024] Invention according to claim 6 is characterized by establishing the sub cam side parallel to said cam side on both sides of the follower of said disk holder in said cam side and the location which counters at said cam member in a disk regenerative apparatus given in any 1 term of claims 3-5. In the above invention according to claim 6, since the follower of a disk holder slides on between a cam side and sub cam sides, rise and fall of a disk holder are guided from the upper and lower sides, and dependability of operation improves.
[0025] In a disk regenerative apparatus given in any 1 term of claims 1-6, invention according to claim 7 near said disk insert/eject means in said stage unit A stock arm is prepared rotatable. Said stock arm It has the press section which pushes in the disk inserted from said disk insertion section to the back of a disk holder by the rotation. To said stage unit The energization means which energizes said stock arm and is rotated in the disk pushing direction is formed in a disk insert/eject direction movable, and said energization means is characterized by having the elastic member which adjusts the energization force. In the above invention according to claim 7, since the energization force is adjusted by the buffer member prepared in the energization means even if there is dispersion in the outer diameter of a disk or the tolerance of use components, the load which joins a disk from a stock arm can be set always constant, and disk pushing actuation is stabilized.
[0026] In a disk regenerative apparatus given in any 1 term of claims 1-7, a positioning member is prepared in said disk holder, and invention according to claim 8 is characterized by having the positioning supporter which supports the positioning member of the disk holder chosen at the time of disk insert/eject near said De Dis holder at it. In the above invention according to claim 8, at the time of disk insert/eject, since the positioning member of a disk holder is supported by the positioning supporter, wandering of a disk holder is prevented and the insert/eject of a disk becomes smooth.
[0027] In a disk regenerative apparatus given in any 1 term of claims 1-8, invention according to claim 9 has two disk detecting elements larger than the diameter of 8cm disk, and is characterized by being prepared at spacing narrower than the diameter of 12cm disk at the disk insertion section side near said disk insert/eject means. In the above invention according to claim 9, when foreign matters, such as 8cm disk, are inserted from the disk insertion section, neither of two disk detecting elements reacts, or only one of disk detecting elements reacts. Thus, when invasion of a foreign matter is detected, by not

carrying out actuation of a disk insert/eject means, malfunction and failure of a foreign matter by drawing in are prevented, and dependability improves.

[0028] Invention according to claim 10 is set to a disk regenerative apparatus given in any 1 term of claims 1-9. Said disk insert/eject means It has the loading roller and follower roller to which a disk is pinched and moved from the upper and lower sides. To said disk insertion section side near [said] the loading roller The upper disk guide and ROWA disk guide which guide migration of a disk from the upper and lower sides are prepared. Said follower roller While being prepared in the direction which attaches and detaches on said loading roller movable It is energized in the direction stuck to said loading roller by pressure by the elastic member, and the edge of said upper disk guide or said ROWA disk guide is characterized by carrying out engagement support at the shank of said follower roller. In the above invention according to claim 10, since engagement support of the edge of an upper disk guide or a ROWA disk guide is carried out at the shank of a follower roller, at the time of insertion of a disk, a disk is certainly led between a loading roller and a follower roller with an upper disk guide and a ROWA disk guide.

[0029] Invention according to claim 11 is characterized by preparing the side disk guide which guides migration of a disk from right and left in the disk holder side near said disk insert/eject means in a disk regenerative apparatus given in any 1 term of claims 1-10. In the above invention according to claim 11, with a side disk guide, at the time of insertion of a disk, a disk is certainly led in a disk holder, and a disk is certainly led between a loading roller and a follower roller at the time of discharge of a disk.

[0030] Invention according to claim 12 is set to a disk regenerative apparatus given in any 1 term of claims 1-11. Said drive base unit The turntable unit in which the disk to play is laid, and the spindle motor made to rotate said turntable unit, A chucking means to hold a disk on said turntable unit, By migration by the side of said turntable of the pickup unit which detects the signal recorded on the disk according to migration in the direction of a path of a disk, and said pickup unit It is characterized by having a chucking discharge means to cancel the disk maintenance by said chucking means, and a location detection means to detect that said pickup unit is in an initial valve position and a chucking discharge location. In the above invention according to claim 12, since it can grasp correctly whether a pickup unit is in an initial valve position at the unexpected time of out of control, or it is in a chucking discharge location with a location detection means, malfunction after control function recovery is prevented and dependability improves it.

[0031] As for said drive base unit, invention according to claim 13 has the rack section in a disk regenerative apparatus given in any 1 term of claims 1-12, it has at least two drive gears to which said drive conveyance means engages and releases said rack section, and said drive base unit is moved, and spacing of said drive gears is characterized by being shorter than the die length of said rack section. In the above invention according to claim 13, since the drive of the rack section is shared by two or more drive gears, the die length of the rack section can be made shorter than the migration stroke of a drive base unit, and equipment is miniaturized.

[0032] In a disk regenerative apparatus given in any 1 term of claims 1-13, said disk holder has a wrap diaphragm for a part of disk top face, respectively, and invention according to claim 14 is characterized by forming in the disk bore side of said diaphragm slitting of magnitude which avoids the projection part of the adapter for 8cm disks.

[0033] In the above invention according to claim 14, since the lap of the projection part and diaphragm is avoidable with slitting even if it uses the adapter for 8cm disks, a disk holder can be formed thinly and equipment is miniaturized.

[0034]

[Embodiment of the Invention] Below, the gestalt of one operation of the disk regenerative apparatus for mount which applied this invention is concretely explained with reference to a drawing. In addition, in the following drawings, the transverse-plane side of a disk regenerative apparatus is made into the front, a tooth-back side is made into back, it sees from a transverse-plane side, and left-hand side is made into a left and right-hand side is made into the method of the right.

[0035] [A. Whole configuration] drawing 1 is the decomposition perspective view showing the outline

of the whole disk regenerative apparatus. As shown in this drawing 1 , the disk regenerative apparatus consists of the ROWA chassis unit 10, the upper chassis unit 20, the stage unit 30, a drive base unit 40, a shutter unit 50, and a damper unit 60.
[0036] Here, between the upper chassis unit 20 and the stage unit 30, six disk holders 21 (#1-#6) are formed possible [rise and fall] in the laminating condition. Moreover, the stage unit 30 is supported by the ROWA chassis unit 10 possible [rise and fall], and the drive base unit 40 is supported by the inferior surface of tongue of this stage unit 30 possible [horizontal migration].
[0037] On the other hand, the shutter unit 50 and the damper unit 60 are attached in the car side fixed, respectively, and the mechanism which consists of the ROWA chassis unit 10, the upper chassis unit 20, a stage unit 30, and a drive base unit 40 is attached by floating to this damper unit 60.
[0038] [-- B. -- outline] of the configuration of each unit -- the outline of the above configurations of each unit is briefly explained with reference to drawing 1 .
[0039] [1. The ROWA chassis unit] ROWA chassis unit 10 is constituted so that the driving force from the 1st motor 1 may perform rise and fall (selection of the separation location of the disk holder 21) of the stage unit 30, closing motion of the shutter unit 50, the disk insertion / discharge to the disk holder 21, a driving force transfer change to the drive base unit 40, immobilization/discharge of a vibrationproofing device, etc. by rotating the mode plate 3 through the gear device 2. In order to control various kinds of members and to make the above-mentioned actuation perform, two or more cams and press sections are formed in this mode plate 3.
[0040] moreover, the slide plates 13 and 14 of the pair for stage unit rise and fall in the medial surface of right and left of the ROWA chassis unit 10 -- rotation of the mode plate 3 -- following -- respectively -- order -- hard flow -- a slide -- it is prepared movable. Furthermore, the Open door link 6 which opens and closes the shutter 52 of the disk insertion opening 51, the ejection arm (ejection member) 7 which performs disk ejection are formed in the ROWA chassis unit 10 rotatable. These members are controlled according to the rotation location of the mode plate 3, and have the composition that an active position changes.
[0041] [2. The disk holder elevator style 22 which makes it go up and down the disk holder 21 (#1-#6) is formed in the upper chassis unit] upper chassis unit 20. By making the 2nd motor 11 into a driving source, and carrying out slide migration of the side selection plates 4 and 5 prepared in the stage unit 30 through two or more gear and upper selection plates 24 and 25 in order, this disk holder elevator style 22 is constituted so that rise and fall of the disk holder 21, division, and selection may be performed.
[0042] [3. The loading roller 33 is formed in the anterior part of the stage unit] stage unit 30 as a disk insert/eject means at the longitudinal direction. Moreover, the guide shaft 34 of a cross direction is formed near the medial surface of Hidari of the stage unit 30. The loading roller 33 and the drive base unit 40 mentioned later are formed possible [a drive] according to the gear device 32 for a level drive by making the 3rd motor 31 into a driving source.
[0043] [-- 4. -- the guide shaft 34 with which the drive base unit] drive base unit 40 was formed in the stage unit 30 -- meeting -- order -- a slide -- it is prepared movable. The rack plate 47 is attached in the left end of the drive base unit 40. And when this rack plate 47 drives according to the gear device 32 for a level drive, it has composition which the drive base unit 40 moves.
[0044] Moreover, the pickup unit 44 is formed in the drive base unit 40. This pickup unit 44 is supported by the leading screw 43 arranged at the longitudinal direction, and has composition which the pickup unit 44 moves by transmitting the driving force from the 4th motor 41 to a leading screw 43 through the gear device 42 for a pickup drive. Furthermore, the turntable 45 is formed pivotable by the spindle motor 46.
[0045] [5. The shutter 52 which opens and closes the disk insertion opening 51 and this is formed in front panel 50a of the shutter unit] shutter unit 50. The shutter 52 is attached in the door plate 53 in one, and opens and closes the disk insertion opening 51 according to actuation of the door plate 53. Here, the door plate 53 is controlled by the mode plate 3 mentioned above through the Open door link 6, and changes to a downward lock out location or an upper open position according to the rotation location of the mode plate 3.

[0046] [6. The damper unit] damper unit 60 is equipped with the damper plates 61 and 62 of a Uichi Hidari pair attached in a car side, and the damper 63 and the damper spring 64 of a pair are prepared in each damper plates 61 and 62, respectively. That is, the mechanism which consists of the chassis units 10 and 20, a stage unit 30, and a drive base unit 40 is supported by floating through four dampers 63 and four damper springs 64 to a car in order to decrease the extraneous vibration at the time of disk playback.
[0047] [C. The configuration and function of each unit are explained more to the detail] pan of the configuration and function of each unit at a detail, referring to drawing 1 - drawing 60 below.
[0048] [1. ROWA chassis unit]
(1) Device drawing 2 for a mode change is the top view showing the initial state of the ROWA chassis unit 10, and drawing 3 is rear view. Moreover, drawing 4 and drawing 5 are the side elevations showing actuation of slide plates 13 and 14, and are equivalent to X view Fig. of drawing 2 , and Y view Fig., respectively. First, as shown in drawing 2 , the mode plate 3 is arranged rotatable focusing on shaft 3a at the core on chassis 10a. Moreover, as shown in drawing 2 and drawing 3 , the 1st motor 1 and the gear device 2 are formed in the right rear corner on chassis 10a. And a rack is formed in the right rear edge of the mode plate 3, and when the gear device 2 engages with this rack, the mode plate 3 has composition rotated with the driving force of the 1st motor 1.
[0049] Here, the mode plate 3 is an initial valve position P0. Disk insert/eject location Pa Disk selection playback location Pb It rotates in between, and according to the rotation location, it is constituted so that two or more members may be controlled by grooved cams 3b-3f and 3g of press sections, respectively. That is, the mode plate 3 is constituted so that the ejection arm 7 may be controlled by 3g of press sections, while controlling the Open door link 6, the stage power link 9, and the switch plate 72 by Cams 3b-3f, respectively in addition to the slide plates 13 and 14 of a pair mentioned above.
[0050] The configuration and function of these members which are controlled by the above mode plates 3 are as follows. namely, the medial surface of right and left of the ROWA chassis unit 10 -- a slide -- as shown in the slide plates 13 and 14 prepared movable at drawing 4 and drawing 5 , two articles of stairway cams 13a and 14a are formed at a time, respectively. As for stairway cam 13a of a slide plate 13, and stairway cam 14a of a slide plate 14, the inclination serves as hard flow mutually. And as shown in drawing 2 , the horizontal plane which made it crooked inside in accordance with the angle of the ROWA chassis unit 10 is established, and the link sections 13d and 14d extended to the cams 3b and 3c of the mode plate 3 are formed in this horizontal plane at the lower part of slide plates 13 and 14. And Pins 13e and 14e were formed in the link sections [13d and 14d] edge, and these pins 13e and 14e have inserted in Cams 3b and 3c.
[0051] The stage power link 9 is established in the ROWA chassis unit 10 rotatable focusing on shaft 9a. Pin 9b inserted in cam 3e to which the mode plate 3 corresponds is prepared in the end of this stage power link 9. Press section 9c which energizes ahead suppressed area 35b prepared in the lower part of the drive plate 35 shown in drawing 1 is prepared in the other end of the stage power link 9. It is constituted so that the stage power link 9 may be rotated according to the rotation location of the mode plate 3 and the drive plate 35 may be ahead moved by this configuration.
[0052] The Open door link 6 is formed rotatable focusing on shaft 6a. Pin 6b inserted in cam 3f of the mode plate 3 is prepared in the end of this Open door link 6. Moreover, engagement section 6c which operates the door plate 53 shown in drawing 1 is prepared in the other end of the Open door link 6. Therefore, according to the rotation location of the mode plate 3, it rotates between a shutter lock out location and a shutter open position, and the Open door link 6 is constituted so that the shutter 52 shown in drawing 1 may be opened and closed. And according to the active position, 6d of press sections which turn on and off mechanically the switch SW2 which constitutes the control circuit of a mechanism is prepared in the Open door link 6.
[0053] Furthermore, the switch plate 72 is formed in the location contiguous to the Open door link 6 on chassis 10a rotatable focusing on shaft 72a. Pin 72b inserted in cam 3d of the mode plate 3 is prepared in the end section of this switch plate 72. And press section 72c which turns on and off mechanically the switch SW1 which constitutes a control circuit according to the active position of the mode plate 3 is

prepared in the other end of the switch plate 72.
[0054] The ejection arm 7 is formed rotatable focusing on shaft 7a, as shown in drawing 1 and drawing 2 . While engagement section 7b which engages with 3g of press sections to which the mode plate 3 corresponds is prepared, spring 7c which energizes this ejection arm 7 to a disk release side is prepared in this ejection arm 7. Therefore, according to the rotation location of the mode plate 3, it rotates between a disk release location and a disk ejection location, and the ejection arm 7 is constituted so that the disk contained in the disk holder by actuation to this disk ejection location may be extruded in the location stuck to the loading roller 33 by pressure. Furthermore, two or more slit 3h corresponding to each active position of the mode plate 3 is formed in the first transition of the mode plate 3.
[0055] This mode plate 3 is the disk insert/eject location Pa by rotation of the clockwise rotation in drawing. It shifts and is the disk selection playback location Pb by rotation of the counterclockwise rotation in drawing. It shifts. more -- a detail -- the mode plate 3 -- initial valve position P0 from -- it rotates to the clockwise rotation in drawing -- alike -- following -- the disk pushing location Pa 1 and the shutter open position Pa 2 -- shifting -- initial valve position P0 from -- it rotates to the counterclockwise rotation in drawing -- it is alike, and it follows and shifts to the floating lock discharge location Pb1 and the stage unit rise-and-fall location Pb2.
[0056] Moreover, the next table 1 shows the relation between the active position of such a mode plate 3, and the active position of two or more members controlled by it. In addition, drawing 6 explained below, and 27, 49, 50 and 58 show the control state of each part material in each active position of the stage unit rise-and-fall location Pb2 (drawing 6), the disk pushing location Pa 1 (drawing 27), the shutter open position (disk ejection location) Pa 2 (drawing 49 , 58), and the floating lock discharge location Pb1 (drawing 50) as an active position where the mode plates 3 differ, respectively.
[0057]
[Table 1]

モードプレート3の動作位置	ディスク挿排位置 Pa		初期位置Po	ディスク選択再生位置Pb	
	シャッタ開放位置Pa2	ディスク押込位置Pa1		フローティングロック解除位置Pb1	ステージユニット昇降位置Pb2
	(図49, 58)	(図27)	(図2)	(図50)	(図6)
スライドプレート13, 14の動作位置	フローティングロック			フローティングロック解除	
ドアオープンリンク6の動作位置	シャッタ開放	シャッタ閉鎖			
イジェクトアーム7の動作位置	ディスクイジェクト	ディスク解放			
ステージパワーリンク9の動作位置	待機位置	回動位置	待機位置		
スイッチプレート72の動作位置	スイッチ解放		スイッチ押圧	スイッチ解放	

(2) Device drawing 4 -7 for stage unit rise and fall are drawing showing the configuration for rise and fall of the stage unit 30 by the slide plates 13 and 14 of a pair. Here, drawing 6 and drawing 7 are the top views and front views of a mechanism, respectively. First, as shown in drawing 4 and drawing 5 , a pair

each pin 30b prepared in the both sides of stage 30a in the stage unit 30 is inserted in the stairway cams 13a and 14a of the slide plates 13 and 14 of a pair, respectively. As this configuration shows to drawing 4 -7, the stage unit 30 moves to the height determined by six steps of each stage of the stairway cams 13a and 14a with level actuation of slide plates 13 and 14.

[0058] That is, as the continuous line in drawing 4 - 7 shows, when the pins 13e and 14e of slide plates 13 and 14 are in the initial valve position of a straight-line part, the stage unit 30 is in the lowest location. And as the two-dot chain line in drawing shows, when the pins 13e and 14e of slide plates 13 and 14 arrive at the endmost part location of a straight-line part, the stage unit 30 is constituted so that the best location may be arrived at.

[0059] (3) Disk holder drawing 8 and drawing 9 are the top views showing the configuration of the disk holder held in the state of the laminating at the ROWA chassis unit 10. As shown in this drawing 8 , each disk holder 21 is constituted by diaphragm 21a which is the plate of C typeface, and disk attachment component 21b prepared in those right and left. As shown in drawing 9 , the magnitude of the radii inside this diaphragm 21a is formed more greatly than the bore of the adapter 97 for 8cm disks, and as shown in drawing 10 and drawing 11 , it is the magnitude to which diaphragm 21a does not lap with projection 97a of an adapter 97. Moreover, as shown in drawing 8 , between diaphragm 21a, hold section 21c which supports the edge of the inserted disk from the bottom gives fixed spacing to disk attachment component 21b, and is formed in it.

[0060] And disk hold spring 21d of the pair for disk maintenance is arranged at right and left of the entrance side (method of drawing Nakashita) of each disk holder 21, respectively. Disk hold spring 21d of this pair, as shown in drawing 9 , when a disk is in the predetermined maintenance location in the disk holder 21, press maintenance of the disk is carried out by one edge at the back side (method of drawing Nakagami) of the disk holder 21. Moreover, projection 21e which engages with each cam groove of the side selection plates 4 and 5 mentioned later is prepared in two places of one place of the posterior part of a left lateral, the anterior part of a right lateral, and a posterior part at the lateral surface of disk attachment component 21b. Furthermore, as shown in drawing 12 - drawing 14 , 21f of positioning lobes of an abbreviation rectangular parallelepiped configuration is horizontally formed in the left lateral anterior part of the disk holder 21.

[0061] six pieces (hereafter referred to as #1-#6 from the bottom) carry out the laminating of the disk holder 21 of this configuration -- having -- each -- projection 21e of disk holder #1-#6 and 21f of positioning lobes are perpendicularly located in a line. As shown in these disk holder #1-#6 drawing 8 and drawing 9 , and drawing 15 -19, while tubed guide sleeve 21g of a perpendicular direction penetrates to two places of right and left, 21h of guide holes is formed near the 21g of this penetration section, respectively.

[0062] On the other hand, as shown in chassis 10a at drawing 1 and drawing 15 , 1st guide pin 10b and 2nd guide pin 10c are being fixed perpendicularly. And disk holder #1-#6 are supported by chassis 10a by inserting this 1st guide pin 10b in guide sleeve 21g, and inserting 2nd guide pin 10c in 21h of guide holes. these -- each -- rise and fall of disk holder #1-#6 have composition guided by guide sleeve 21f and 2nd guide pin 10c. In addition, as shown in drawing 16 -19, 1st guide pin 10b has the die length which can be guided irrespective of the rise-and-fall location of disk holder #1-#6, and 2nd guide pin 10c has the die length from which it separates from 21h of guide holes of the disk holder which went up, when disk holder #1-#6 are divided.

[0063] Furthermore, between disk holder #1 of the disk holder #6 and the bottom of the maximum upper case, as shown in drawing 8 , it is connected by the pantograph 22 prepared in the left rear side face and right lateral. This pantograph 22 is the member which two plates 22a was made to cross and concluded that intersection part rotatable, as shown in drawing 20 . The end section of two plates 22a is attached in the lateral surface of disk holder #6 and disk holder #1 rotatable, respectively, as shown in drawing 21 .

[0064] Slide pin 22b is prepared in the other end of two plates 22a, and each slide pin 22b is inserted in it at slide slot 21i formed in the lateral surface of disk holder #6 and disk holder #1. Limb 21j with which slide pin 21h engages is formed in the edge of this slide slot 21i. And since two plates 22a is energized in the direction mutually closed by torsion spring 22c, the disk holder 21 whole is energized

by disk holder #6 and #1 in the direction closed from the upper and lower sides.
[0065] [-- 2. -- upper chassis unit] -- the configuration of the upper chassis unit 20 equipped with the device for making it go up and down the above disk holders 21 is explained. In addition, for drawing 22 , a top view and drawing 23 are [a right side view and drawing 25 of rear view and drawing 24] left side views. That is, as shown in drawing 22 </A>, two or more gears are arranged superficially on the top face of chassis 20a of the upper chassis unit 20 . This gear train is constituted by two major-diameters gear 12b which tells rotation of driving-side gear train 12a by the side of the 2nd motor 11, and this driving-side gear train 12a to the racks 24a and 25a of the upper selection plates 24 and 25.
[0066] and the upper selection plates 24 and 25 -- the right and left on the top face of chassis 20a -- order -- a slide -- it is prepared movable. The lateral portions 24b and 25b perpendicularly crooked in that side edge are formed in this upper selection plate 24. The stair-like top cams 24c and 25c which become high toward the front are formed in the upper part of these lateral portions 24b and 25b, and the bottom ramps 24d and 24d which become low toward the front are formed in the lower part of lateral portions 24b and 24c.
[0067] Moreover, the side selection plates 4 and 5 are connected with the upper selection plates 24 and 25 as follows. namely, the side selection plates 4 and 5 -- the medial surface of right and left of the stage unit 30 -- order -- a slide -- it is prepared possible [rise and fall] with the stage unit 30 movable. On the other hand, Pins 24e and 25e are formed near the lower limit section of the top cam grooves 24c and 25c of the upper selection plates 24 and 25. and the guide slots 4a and 5a of the shape of an up-and-down straight line where these pins 24e and 25e were formed in the side selection plates 4 and 5 -- a slide -- it is inserted in movable.
[0068] Therefore, the side selection plates 4 and 5 are constituted by engagement into Pins 24e and 25e and the guide slots 4a and 5a so that it may move with the longitudinal slide movement of the upper selection plates 24 and 25. And since Pins 24e and 25e carry out slide migration of the inside of guide slot 4a and 5a even if the upper selection plates 24 and 25 move up and down with vertical movement of the stage unit 30, the side selection plates 4 and 5 have composition which is not interlocked with vertical movement of the stage unit 30.
[0069] While the stair-like cam grooves 4b and 5b for division which counter the side selection plates 4 and 5 in parallel with the top cam grooves 24c and 25c of the upper selection plates 24 and 25 are formed, the top ramps 4e and 5e which counter in parallel with the bottom ramps 24d and 25d are formed. Moreover, the cam grooves 4c and 5c for chucking are formed in the side selection plates 4 and 5. These cam grooves 4c and 5c for chucking are slitting formed in the slanting lower part toward the front from the upper limit of the cam grooves 4b and 5b for division. These cam grooves 4c and 5c for chucking are extended to near the pars intermedia of the height direction in the side selection plates 4 and 5, and the horizontal level is prepared in that lower limit.
[0070] And the horizontal levels 4d and 5d for evacuation are formed in the branch point of the cam grooves 4c and 5c for chucking, and the cam grooves 4b and 5b for division. Furthermore, the branch point of the cam grooves 4c and 5c for division and the top ramps 4e and 5e serves as the acute sections 4f and 5f. Moreover, two or more slit 5g corresponding to each active position of the side selection plate 5 is formed in the upper limb of the side selection plate 5 on the left-hand side of the stage unit 30.
[0071] in addition, it mentions later -- as -- each -- projection 21a in disk holder #1-#6 is constituted by the cams 4b and 5b for division of the side selection plates 4 and 5, the cam grooves 4c and 5c for chucking, the horizontal levels 4d and 5d for evacuation, the top ramps 4e and 5e, and the acute sections 4f and 5f so that it may be energized in the vertical direction. And the side selection plates 4 and 5 go up and down with rise and fall of the stage unit 30, and they are constituted so that the separation location of the disk holder 21 may be chosen.
[0072] [3. Stage unit]
(1) The gear organization charts 26 -32 for a level drive are drawings showing the configuration of the disk passage section circumference of the stage unit 30, and, for drawing 26 and drawing 27 , a top view and drawing 28 are [left lateral perspective drawing and drawing 31 of a front view, drawing 29 , drawing 30 , and drawing 32] right lateral perspective drawing. First, the gear device 32 for a level

drive for driving the loading roller 33 and the drive base unit 40 is constituted as follows. That is, as shown in drawing 1 , drawing 29 , and drawing 30 , the drive plate 35 is formed in the left medial surface of the stage unit 30. the pin which guide slot 35a of the shape of a straight line of order was formed, and was prepared in this guide slot 35a at the stage unit 30 is inserted in this drive plate 35 -- the drive plate 35 -- order -- a slide -- it is prepared movable.

[0073] Moreover, as mentioned above, the drive plate 35 is connected with the mode plate 3 through the stage power link 9. That is, as shown in drawing 26 and drawing 27 , suppressed area 35b is prepared in the lower limit of the drive plate 35, and when this suppressed area 35b is energized by press section 9c of the stage power link 9, the longitudinal slide movement of the drive plate 35 has composition controlled according to the rotation location of the mode plate 3. Furthermore, the drive plate 35 is back energized by spring 35d.

[0074] And as shown in drawing 29 and drawing 30 , two stage gears 30c and 30d are formed in the left lateral of the stage unit 30. While these stage gears 30c and 30d are mutual, they are prepared in the same direction rotatable by 32d of gear trains. In addition, stage gears [30c and 30d] spacing is arranged at spacing [a little] shorter than the die length of rack section 47a of the rack plate 47 shown in drawing 1 . They are such stage gears 30c and 30d with the configuration that rotation of the loading roller 33 is transmitted, through gear train 32c by the side of a guide shaft. That is, left pinion 33b is prepared in the left end section of the loading roller 33, and this left pinion 33b is engaging with the end of gear train 32c by the side of a guide shaft. And the other end of gear train 32c by the side of a guide shaft is prepared in idler gear 32b possible [engaging and releasing]. Idler gear 32b is prepared in the idler plate 32f front end section, and is always connected to 32d of gear trains between stage gears through connection gear 32e.

[0075] It is prepared in the left lateral of the stage unit 30 rotatable idler plate 32f at connection gear 32e and the same axle. And it is inserted in grooved cam 35c prepared in the front end of the drive plate 35 pin 32g prepared in the idler plate 32f back end. When it is in the posterior part of pin 32g fang furrow cam 35c as it has the level difference to which that front end becomes low, and it is shown in drawing 29 , and idler gear 32b engages with gear train 32c by the side of a guide shaft and it is shown in drawing 30 , when it is in the front end of pin 32g fang furrow cam 35c, this grooved cam 35c is constituted so that idler gear 32b may separate from gear train 32c by the side of a guide shaft.

[0076] And as shown in drawing 26 and drawing 27 , near the loading roller 33, the stock arm (stock member) 36 is formed rotatable focusing on shaft 36a. The stock arm 36 has press section 36b which pushes in the disk which is separated from the loading roller 33 to the predetermined maintenance location in the disk holder 21 by the rotation. Moreover, the stock arm 36 is energized with the torsion spring which is not illustrated at the side which releases a disk.

[0077] The device in which such a stock arm 36 is rotated is constituted as follows. that is, it is shown in drawing 26 and drawing 27 -- as -- the back of the stock arm 36 -- press plate 35e -- order -- a slide -- it is prepared movable. The front end of this press plate 35 is prepared in the back end of the stock arm 36 possible [attachment and detachment] according to that migration. On the other hand, as shown in drawing 29 and drawing 30 , buffer plate 35f is prepared in the location which laps with the drive plate 35 at the posterior part of the drive plate 35. this buffer plate 35 -- the drive plate 35 -- receiving -- small -- order -- a slide -- it is prepared movable and is ahead energized by spring 35g attached between the drive plates 35.

[0078] And the this buffer plate 35f part is prepared in the back end of press plate 35e possible [attachment and detachment] according to migration of the drive plate 35, as shown in drawing 27 and drawing 28 . Therefore, rotation of the stock arm 36 has composition controlled according to the location of the drive plate 35 which moves by this with rotation of the mode plate 3, and press plate 35e. Furthermore, as shown in drawing 12 -14, drawing 26 , and drawing 27 , 35h of positioning supporters is formed in the common-law marriage of press plate 35e. 35h of this positioning supporter is the small plate prepared in parallel with two steps of upper and lower sides, and it is a member which 21f of positioning lobes of the disk holder 21 is inserted, and holds the disk holder 21 according to that longitudinal slide movement.

[0079] (2) Explain the configuration of disk loading / ejection device, next the disk loading / ejection device in the stage unit 30. That is, as shown in drawing 28 , the upper disk guide 37 and the ROWA disk guide 38 which guide insertion and discharge of Disk D from the upper and lower sides are prepared in the anterior part of the stage unit 30. And as shown in drawing 31 , the 3rd motor 31 is formed in the right end of the inferior surface of tongue of the ROWA disk guide 38 in the stage unit 30. The 3rd motor 31 is connected with gear train 32a by the side of the motor of the gear device 32 for a level drive prepared in the right medial surface of the stage unit 30. And right pinion 33a is prepared in the right end of the loading roller 33, and the driving force of the 3rd motor 31 has composition always transmitted to right pinion 33a through gear train 32a by the side of a motor.
[0080] Moreover, as shown in drawing 32 , the upper disk guide 37 is being fixed to the monotonous inferior surface of tongue of stage 30a, and the loading roller 33 is arranged at the back side of this upper disk guide 37. This loading roller 33 is formed in the location which separates from this disk, before the disk drawn at the time of disk insertion arrives at the predetermined maintenance location in the disk holder 21. Under the upper disk guide 37 and the loading roller 33, the ROWA disk guide 38 vacates spacing, is arranged, and forms the disk path.
[0081] Pivot 38a is prepared in the loading roller 33 and the location which counters in parallel and up and down, and **** of the ROWA disk guide 38 is supported by this pivot 38 rotatable at the back side of this ROWA disk guide 38. ROWA roller 38c which follows on the loading roller 33 and pinches a disk between the loading rollers 33 is prepared in the perimeter of pivot 38a.
[0082] Furthermore, the both ends of pivot 38a are energized by spring 38b of a pair in the upper part, i.e., the direction which ROWA roller 33c sticks to the loading roller 33 by pressure, while they are supported by support plate 30e of the pair prepared in the stage 30a side possible [vertical movement]. Moreover, as shown in drawing 26 , the edge of right and left of a disk is inserted in and the side disk guides 37a and 37b which guide migration of a disk are formed in the disk holder 21 side near the both ends of the loading roller 33 and ROWA roller 38c. In addition, the side elevation of the side disk guides 37a and 37b is shown in drawing 39 and drawing 55 which are mentioned later. The taper side is established in the entry part of the slot through which the edge of a disk passes at the time of disk discharge to the disk holder 21 side of these side disk guides 37a and 37b.
[0083] By the above configurations, while rotating the loading roller 33 through the gear device 32 for a level drive with the driving force of the 3rd motor 31, a disk is pinched between the loading roller 33 and ROWA roller 38c, and horizontal migration of the disk D is carried out. That is, when the disk is not inserted, ROWA roller 38c is energized by spring 38b in the upper part location stuck to the loading roller 33 by pressure. This ROWA roller 38c resists the energization force of spring 38b, and is caudad depressed by the pushing force at the time of a disk being inserted. In this case, since **** of the ROWA disk guide 38 is also depressed caudad, the clearance which introduces the inserted disk D is formed between the upper disk guides 37, and drawing in with the loading roller 33 is made to start smoothly.
[0084] (3) As mentioned above, according to the rotation location of the stage power link 9, rotate the stock arm 36 through the drive plate 35, and receipt of the disk D to the disk receipt disk holder 21 to a disk holder is the disk maintenance location D0 about Disk D. It pushes in. That is, when a position in readiness (drawing 2 , drawing 6 , drawing 49 , drawing 50 , drawing 58) has the stage power link 9, the drive plate 35 is also back according to the spring 35d energization force, and since the stock arm 36 is held at the initial valve position, it influences a disk in any way. On the other hand, since the drive plate 35 resists the spring 35d energization force when the stage power link 9 moves to a rotation location (drawing 27), and it moves ahead, the stock arm 36 rotates, and it is the disk maintenance location D0 about Disk D. It pushes in. In addition, at the time of such pushing, when buffer plate 35f prepared between the drive plate 35 and press plate 35e carries out slide migration and spring 35g is extended, the load added from the stock arm 36 is absorbed and adjusted.
[0085] In addition, as mentioned above, when the mode plate 3 is in the disk pushing location Pa 1, the stage power link 9 rotates and the drive plate 35 and press plate 35e move ahead. For this reason, as shown in drawing 12 -14, according to migration of press plate 35e, 21f of positioning lobes of the disk

holder 21 is inserted into 35f of positioning supporters. Therefore, the support for 21f of positioning lobes will also join three over three projection 21e further, and the supporting point of the disk holder 21 will be supported by four places at the time of disk insert/eject.
[0086] (4) Horizontal migration drawing 33 -39 of a drive base unit are drawing showing the configuration for the horizontal migration of the drive base unit 40 in the stage unit 30, and, for drawing 33 and drawing 34 , a top view and drawing 35 -37 are [a front view and drawing 39 of a left side view and drawing 38] right side views.
[0087] namely, the rack plate 47 with which rack section 47a was formed in the guide shaft 34 prepared in the stage unit 30 at the upper edge part as shown in drawing 35 -37 -- a slide -- it is prepared movable. And this rack section 47a is prepared possible [engagement on the stage gears 30c and 30d prepared in the left medial surface of the stage unit 30] (drawing 29 , 39). As mentioned above in addition, stage gears [30c and 30d] spacing Since it is arranged at spacing [a little] shorter than the die length of rack section 47a, drive base 40a It has movable composition in the location (drawing 35) where rack section 47a engages only with stage gear 30d, the location (drawing 36) which engages with both whose rack section 47a is the stage gears 30c and 30d, and the location (drawing 37) where rack section 47a engages only with stage gear 30c. Furthermore, the left end of drive base 40a is attached in the lower limit of the rack plate 47.
[0088] on the other hand, it is shown in the right end of drive base 40a at drawing 33 and drawing 34 -- as -- the position plate 86 -- order -- a slide -- it is prepared movable. Two or more notch 86a is formed in the edge of the position plate 86, and when the edge of the position spring 48 established in the corner of the position plate 86 at drive base 40a engages with this notch 86a, it has the composition that drive base 40a is positioned. Furthermore, regulation pawl 86b projected on right-hand side is prepared in the anterior part of the position plate 86. slit 30f on the straight line of the cross direction formed in the right lateral of the stage unit 30 as this regulation pawl 86b was shown in drawing 38 and drawing 39 -- a slide -- it is inserted in movable. In addition, although this slit 30 is formed shorter than the movement magnitude of the stage unit 30, it has the composition that the movement magnitude of the stage unit 30 is secured, by slide migration of the position plate 86.
[0089] [4. Drive base unit]
(1) Delivery device drawing 40 -42 of a pickup unit are drawing showing the configuration of the delivery device of the pickup unit 44 in the drive base unit 40, and drawing 40 is [a front view and drawing 42 of a top view and drawing 41] side elevations. In addition, in these drawing 40 -42, from a viewpoint which shows a delivery device clearly, a drawing is simplified and the configuration which is not related a delivery device and directly is omitted.
[0090] First, as shown in drawing 40 and drawing 41 , along with the longitudinal direction, the leading screw 43 is arranged at drive base 40a. The edge by the side of the turntable 45 of this leading screw 43 is connected with the end of lead shaft 43a by the gear. The other end of this lead shaft 43a is connected with the 4th motor 41 through the gear device 42 for a pickup drive. Therefore, the driving force of the 4th motor 41 has composition transmitted to a leading screw 43 through the gear device 42 for a pickup drive, and lead shaft 43a.
[0091] And the end of the pickup unit 44 is supported by the leading screw 43, and the other end is supported by drive base 40a. That is, the screw holder 91 is formed in the end of the pickup unit 44. As the screw holder 91 is shown in drawing 42 , it has the cross section of an abbreviation L typeface which consists of vertical panel 91a and horizontal plate 91b, and the edge of horizontal plate 91b is being fixed to the pickup unit 44. Vertical panel 91a of the screw holder 91 is arranged so that a leading screw 43 may be pinched between the side faces of the pickup unit 44. And two or more engagement projection 91c which engages with the screw section of a leading screw 43 is prepared in the field which counters the leading screw 43 of vertical panel 91a. In addition, since elastic support of a part of engagement projection 91c is carried out and it is energized with the tabular screw holder spring 92 at the leading-screw 43 side, it is prevented with backlash.
[0092] Moreover, as shown in drawing 42 , the flat spring 93 is formed in the inferior surface of tongue of the other end of the pickup unit 44. guide-rail 40b by which this flat spring 93 was fixed to drive base

40a -- receiving -- the pickup unit 44 -- a slide -- movable, since elastic support is carried out, as for the pickup unit 44, rotation and backlash are prevented. By the above configurations, the pickup unit 44 carries out slide migration along with a leading screw 43 with rotation of the leading screw 43 by the driving force of the 4th motor 41.

[0093] (2) Turntable unit drawing 43 - drawing 46 are drawings showing the configuration of the turntable unit 45 circumference in the drive base unit 40, and the front view, drawing 45 , and drawing 46 in which drawing 43 and drawing 44 include an important section cross section are a top view. In addition, in these drawing 43 -46, in order to show the configuration of the turntable unit 45 circumference clearly, some members are omitted.

[0094] That is, as shown in drawing 43 , the direct drive of the turntable 45 is carried out by the spindle motor 46 arranged in piles caudad. The chucking device for holding a disk on this turntable 45 is explained below. Three disk hooks 94 which engage with the bore of Disk D are formed in the crowning of a turntable 45 at equal intervals. Claw part 94a which engages with the bore of Disk D is prepared in the outside of this disk hook 94, and, inside, suppressed area 94b horseshoe-shaped in the longitudinal section is prepared. And the disk hook 94 is formed rotatable between the disk maintenance location where claw part 94a engages with the bore of Disk D centering on supporting-point 94c, and the disk release location from which it separates from the bore of Disk D. In addition, although it calls in and has become a taper, since the disk hook 94 is constituted so that it may be completely contained in this calling-in taper when [which upheaved in the approximate circle column configuration] it rotates in a disk release location, an excessive load does not arise at the time of chucking of Disk D, and chucking discharge, and the center section of the turntable 45 does not spoil the guidance function of the bore of the disk D by the calling-in taper, either.

[0095] Moreover, between the turntable 45 and the spindle motor 46, chucking sleeve 94d of the abbreviation spool configurations of these and the same axle is prepared possible [vertical movement]. The chucking sleeve 94d upper part serves as a disk configuration of a minor diameter, and the periphery edge is located in the character of KO of suppressed area 94b. And since it is energized up by spring 94e chucking sleeve 94d, the upper limit of suppressed area 94b is pressed up by the chucking sleeve 94d upper part, and the disk hook 94 is energized at the disk maintenance location side. On the other hand, the chucking sleeve 94d lower part serves as a disk configuration of a major diameter, and the taper side of breadth is established in the periphery at last.

[0096] (3) the load discharge device of a disk hook -- as shown in drawing 45 and drawing 46 , the 1st chucking arm 95 and the 2nd chucking arm 96 are formed in chucking sleeve 94d above near. The 1st chucking arm 95 is formed rotatable focusing on shank 95a on drive base 40a, and the projection is prepared in this shank 95a. Moreover, engaged point 95b which is a projection is prepared in the pars intermedia of the 1st chucking arm 95. And slant surface part 95c which attaches and detaches to a chucking sleeve 94d taper side by the rotation is prepared in shank 95a of the 1st chucking arm 95, and an opposite end.

[0097] On the other hand, the end of the 2nd chucking arm 96 is prepared rotatable focusing on shank 96a on drive base 40a. Engagement hole 96b in which engaged point 95b was inserted is prepared in the pars intermedia of this 2nd chucking arm 96, and the 1st chucking arm 95 and the 2nd chucking arm 96 are formed in the location which crosses considering engaged point 95b as an intersection. engagement hole 96b is formed in the magnitude which had mist and allowances from engaged point 95b -- having -- **** -- the inside of engagement hole 96b -- engaged point 95b -- a constant rate -- it is prepared movable. Moreover, 96d of slant surface parts which attach and detach to the taper side of chucking sleeve 94c by the rotation is established in shank 96a of the 2nd chucking arm 96, and an opposite end. And engagement section 96c which is notching which engages with the projection of shank 95a is formed near the 96d of the slant surface parts in the 2nd chucking arm 96.

[0098] Furthermore, the 2nd chucking arm 96 is energized by spring 96e attached near the engagement hole 96b in the direction in which 96d of slant surface parts separates from chucking sleeve 94c. Therefore, slant surface part 95c is energized in the direction which separates from chucking sleeve 94c through engaged point 95b to which the 1st chucking arm 96 also engaged with engagement hole 96b of

the 2nd chucking arm 96.
[0099] moreover -- a location parallel to lead shaft 43a [/ near the turntable unit 45] as shown in drawing 40 and drawing 41 -- communication shaft 43b -- right and left -- a slide -- it is prepared movable. The end of this connection shaft 43b is prepared in the edge of the pickup unit 44 possible [attachment and detachment], as shown in drawing 45 and drawing 46 . And large press section 43c of a path is prepared in the pars intermedia of communication shaft 43b. furthermore -- the edge by the side of shank 95a in the 1st chucking arm 95 -- communication shaft 43b -- a slide -- 95d of slots inserted in movable was formed, and press section 43c is in contact with this edge.
[0100] By the above configurations, if the pickup unit 44 contacts the edge of communication shaft 43b as shown in drawing 46 , press section 42b will move rightward with lead shaft 42a, and the edge of the 1st chucking arm 95 will be pressed. Then, the slant surface part 95c rotates the 1st chucking arm 95 in the direction adjacent to the taper side of chucking sleeve 94c. The energization force from engaged point 95b is transmitted to coincidence through engagement hole 96b, the 2nd chucking arm 96 resists the energization force of spring 94e, and it rotates in the direction in which the slant surface part 95c touches the taper side of chucking sleeve 94c. Therefore, since chucking sleeve 94c resists the energization force which is spring 94d, moves caudad and energizes the lower limit of suppressed area 94b as shown in drawing 44 , the disk hook 94 rotates and claw part 94a separates from disk inner circumference.
[0101] [5. Shutter unit] drawing 47 and drawing 48 are the front views showing the condition of the shutter unit 50 in the case of being in the case where a shutter lock out location has the Open door link 6, and a shutter open position, respectively.
[0102] first, it is shown in drawing 47 -- as -- the door plate 53 -- front panel 50a of the shutter unit 50 -- receiving -- guide slot 53a -- up and down -- a slide -- it is prepared movable. the door link 54 which connects the Open door link 6 and the door plate 53 with the location which laps with the door plate 53 of the lower part of the disk insertion opening 51 -- guide slot 54a -- right and left -- a slide -- it is prepared movable. Slanting rise-and-fall slot 54b of a left riser is formed in right and left of this door link 54, and two pin 53b prepared in right and left of the door plate 53 is inserted in this rise-and-fall slot 54b. Furthermore, the door link 54 is energized by spring 54d on left-hand side while engaged portion 54c which engages with press section 6c of the Open door link 6 is prepared.
[0103] By the above configuration, according to the rotation location of the Open door link 6, you make it go up and down the door plate 53 through the door link 54, and a shutter 52 is opened and closed. Namely, since press section 6c is separated from engaged portion 54c of the door link 54 as shown in drawing 47 when a shutter lock out location has the Open door link 6 as shown in drawing 2 , according to the energization force of spring 53a, it is in left-hand side, and the door plate 53 is held caudad and, as for the door link 54, a shutter 52 blockades the disk insertion opening 51. Moreover, since engaged portion 54c of the door link 54 be press by press section 6c of the Open door link 6 by the method of the right as show in drawing 48 when a shutter open position have the Open door link 6 as show in drawing 49 , the energization force in which the door link 54 be spring 54d be resist, it move to left-hand side, the door plate 53 be hold in an upper open position, and a shutter 52 open the disk insertion opening 51.
[0104] [6. Damper unit]
(1) The mechanism which consists of the ROWA chassis unit 10, the upper chassis unit 20, a stage unit 30, and a drive base unit 40 is supported by floating to a car through four dampers 63 of the damper unit 60, and four damper springs 64 in order to decrease the extraneous vibration at the time of disk playback, as the mechanism carried out vibrationproofing device ****.
[0105] (2) In order to make in agreement the location of the disk insertion opening 51 by the side of the shutter unit 50, and the disk path by the side of the stage unit 30 of a mechanism at the time of immobilization / discharge of a vibrationproofing device, and disk loading/ejection, fix a vibrationproofing device and a mechanism is fixed to the damper unit 60. Therefore, a vibrationproofing device will be canceled at the time of the disk playback which continues at the time of disk loading, and a mechanism will be made into floating. Such immobilization/discharge of a vibrationproofing device are concretely explained with reference to drawing 50 -54.

[0106] Here, drawing 50 is the top view showing the shift to the discharge condition of a vibrationproofing device from a fixed condition. Moreover, drawing 51 -54 are the front view and side elevation corresponding to the fixed position and discharge location of a vibrationproofing device. First, as shown in the slide plates 13 and 14 of a pair shown in drawing 4 and drawing 5 at drawing 50 , the lock links 18 and 19 for immobilization/discharge of a vibrationproofing device are connected, and it is constituted so that the actuation from the initial valve position of slide plates 13 and 14 may cancel a vibrationproofing device. That is, in the slide plates 13 and 14 of a pair, it has the horizontal level crooked inside in accordance with the angle of the ROWA chassis unit 10, and grooved cams 13b and 14b are formed in this horizontal level, respectively. On the other hand, the lock links 18 and 19 are formed rotatable centering on Shafts 18a and 19a to the ROWA chassis unit 10, and the pins 18b and 19b inserted in the grooved cams 13b and 14b of slide plates 13 and 14 are formed in each.
[0107] Moreover, the engagement sections 13c, 14c, 18c, and 19c which engage with the damper unit 60 are formed in slide plates 13 and 14 and the lock links 18 and 19, respectively. And as shown in drawing 50 and drawing 53 (A), the lock sections 61a and 61b which engage with engagement section 13c of the slide plate 13 of the same side and engagement section 18c of the lock link 18, respectively, and lock this are formed in one damper plate 61. Moreover, as shown in drawing 50 and drawing 53 (B), the lock sections 62a and 62b which engage with engagement section 14c of the slide plate 14 of the same side and engagement section 19c of the lock link 19, respectively, and lock this also on the damper plate 62 of another side are formed.
[0108] Moreover, as mentioned above, the lock links 18 and 19 of a pair are rotated with migration of slide plates 13 and 14 with the engagement relation of the Pins 18b and 19b and grooved cams 13b and 14b of slide plates 13 and 14. More, as shown in a detail at drawing 4 and drawing 5 , the bottom of the stairway cams 13a and 14a of slide plates 13 and 14 is longer than other stages, and actuation of the lock links 18 and 19 by grooved cams 13b and 14b is performed within the limits of the migration stroke corresponding to this bottom. Therefore, when slide plates 13 and 14 move from the initial valve position shown in drawing 2 and pin 30b of the stage unit 30 arrives at the endmost part of the bottom of the stairway cams 13a and 14a, the lock links 18 and 19 arrive at a discharge location.
[0109] By the above configurations, when the slide plates 13 and 14 of a pair are in an initial valve position and a fixed position has the lock links 18 and 19 Engagement section 13c of a slide plate 13 and engagement section 18c of the lock link 18 engage with the sense which extends the lock sections 61a and 61b to which the damper plate 61 corresponds at drawing 50 , drawing 51 , and drawing 53 , respectively so that it may be shown. Engagement section 14c of a slide plate 14 and engagement section 19c of the lock link 19 engage with the sense which puts the lock sections 62a and 62b to which the damper plate 62 corresponds, respectively.
[0110] Thus, a lock of a vibrationproofing device fixes a mechanism to the position to the shutter unit 50 and the damper unit 60, i.e., the location whose location of the disk insertion opening 51 of the shutter unit 50 and the disk path of the stage unit 30 of a mechanism corresponds, as shown in drawing 7 .
[0111] On the other hand, when slide plates 13 and 14 move, a discharge location is arrived at and the lock links 18 and 19 arrive at a discharge location, the lock of a vibrationproofing device is canceled and a vibrationproofing device is made to act, when the engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 separate from the damper unit 60 as shown in drawing 50 , drawing 52 , and drawing 54 . Thus, discharge of the lock of a vibrationproofing device supports a mechanism by floating through a damper 63 and the damper spring 64 to a car.
[0112] [-- 7. -- configuration] of a detection device -- actuation of each configuration member in the above disk units is performed by controlling actuation of the 1st motor 1, the 2nd motor 11, the 3rd motor 31, and the 4th motor 41 by the control circuit which is not illustrated. And control by these control circuits is performed based on the detection device by the switch and sensor which have been arranged at each part in equipment. The configuration of such a detection device is explained below.
[0113] (1) As shown in mode plate location detection device **** and drawing 2 , the photosensor PH 1 for detecting the location of the mode plate 3 optically is formed in chassis 10a using two or more slit 3h

of the mode plate 3. Moreover, pin 72b which engages with cam 3d prepared in the mode plate 3 is prepared in the switch plate 72, and an active position changes to it by the case where the mode plate 3 is in an initial valve position, and the case of being other. And press section 72c is prepared in the edge of the switch plate 72, and when the switch plate 72 is in an initial valve position, the 1st switch SW1 pressed by press section 72c is formed in chassis 10a.

[0114] (2) 6d of press sections is prepared, and when a shutter open position has the Open door link 6, the switch SW2 pressed by 6d of press sections is formed in the edge of the Open door link 6 near the shutter appearance device switch plate 72 at chassis 10a. Moreover, as shown in drawing 47 and drawing 48 , when the shutter 52 blockades the disk insertion opening 51, the switch SW3 pressed by the edge of the door plate 53 is formed in front panel 50a of the shutter unit 50.

[0115] (3) As shown in disk holder detection device drawing 39 , the photosensor PH 2 for detecting the location of the disk holder 21 optically is formed in the upper limb of the right lateral of the stage unit 30 using two or more slit 5g of the side selection plate 5 shown in drawing 25 . Moreover, it is pressed by the front end of the side selection plate 5, and the switch SW4 which detects that the side selection plate 5 is in a front initial valve position is formed in the right medial surface of the stage unit 30.

[0116] (4) As shown in drive base detection device one side and drawing 55 , while the switch plate 39 pressed by the front end of drive base 40a is formed in the anterior part of the left medial surface of the stage unit 30 rotatable, the switch SW5 which detects that drive base 40a is in a front initial valve position is formed in the near. Press section 39a which presses a switch SW5 by the rotation is prepared in the edge of the switch plate 39. And the switch plate 39 is energized with the spring which is not illustrated in the direction in which press section 39a separates from a switch SW5.

[0117] Moreover, the photosensor PH 3 detected optically is formed [that drive base 40a is in a playback location, and] near the center of an upper limb of the left medial surface of the stage unit 30. Furthermore, it is pressed by the back end of drive base 40a, and the switch SW6 which detects that drive base 40a is in a disk chucking location is formed in the posterior part of the left medial surface of the stage unit 30.

[0118] (5) As shown in a disk detection device pan at drawing 26 , on both sides of the loading roller 33, two places and a total of four photosensors 4-PHs 7 are arranged by the disk passage section of the stage unit 30, and it connects with the entrance side in it at the two-place and back side at the control circuit of a mechanism. Such photosensors 4-PHs 7 consist of the emitter parts and light sensing portions of a vertical pair which have been arranged as sandwiched the up-and-down disk guides 37 and 38, as shown in drawing 28 .

[0119] Among these, two photosensors 4 and PHs 5 of an entrance side are formed in order to detect disk loading initiation, slightly more widely than the path of 8cm disk, are arranged at spacing narrower than the path of 12cm disk, and have come be made by discernment of the path of a disk in the latest location of the inlet port distant from the loading roller 33. On the other hand, two photosensors 6 and PHs 7 by the side of the back are arranged at narrower spacing, and detect the disk loading completion with the loading roller 33, and the completion of disk ejection. Below, the detection actuation by such photosensors 4-PHs 7 is explained with reference to drawing 56 and drawing 57 .

[0120] Here, the explanatory view in which the explanatory view in which drawing 56 (A) shows disk loading initiation detection, and drawing 56 (B) show disk loading completion detection, and drawing 56 (C) are the explanatory views showing the completion detection of disk ejection. Moreover, the explanatory view and drawing 57 (C) which show detection when the explanatory view and drawing 57 (B) which show detection when drawing 57 (A) inserts the 8cm disk Ds from the center of disk insertion opening insert the 8cm disk Ds from the left end section of disk insertion opening are the explanatory view showing the detection at the time of inserting the 8cm disk Ds from the right end section of disk insertion opening.

[0121] First, in the initial state at the time of disk insertion standby, as shown in drawing 56 (A), only when [although four sensing elements 81-84 have each in the condition of not detecting, among these] two photosensors 4 and PHs 5 of an entrance side change to a detection condition at two-piece coincidence, "insertion of the 12cm disk D" is detected. That is, based on such an operating condition of

photosensors 4-PHs 7, distinguish the control circuit of a mechanism from the thing in "the condition that the 12cm disk D was inserted in the disk loading initiation detection location (drawing 26)", it makes rotation of the loading roller 33 start, and starts disk loading.

[0122] And two photosensors 6 and PHs 7 by the side of the back change in the middle of the continuing disk loading by migration of Disk D at two-piece coincidence at a detection condition. Then, as shown in drawing 56 (B), two photosensors 4 and PHs 5 of an entrance side change to the condition of not detecting, again with passage of Disk D, and when two photosensors 6 and PHs 7 by the side of the back change to the condition of not detecting, again, "disk loading completion with a loading roller" is detected further.

[0123] That is, the control circuit of a mechanism is distinguished from the thing in "the condition that the 12cm disk D reached to the disk loading completion detection location" based on such an operating condition of photosensors 4-PHs 7, and suspends rotation of the loading roller 33. Furthermore, Disk D is the disk maintenance location D0 which it is further pushed into a back side by the stock arm 36 (drawing 27) at the same time it separates from the loading roller 33 in a disk loading completion detection location, and is finally shown according to a two-dot chain line in drawing 56 (B). It reaches and is held here.

[0124] Thus, when Disk D is in a disk maintenance location, four photosensors 4-PHs 7 have each in the condition of not detecting. If a disk ejection command is received from this condition, the control circuit of a mechanism will make the rotation to the hard flow of the loading roller 33 start, and will start disk ejection while extruding Disk D from a disk maintenance location by the ejection arm 7, as shown in drawing 58 . In this case, as shown in drawing 56 (C), when Disk D is extruded, two photosensors 6 and PHs 7 by the side of the back change to a detection condition, and two photosensors 4 and PHs 5 of an entrance side change to a detection condition with migration of a disk. Then, when two photosensors 6 and PHs 7 by the side of the back change to the condition of not detecting, again with passage of Disk D, "the completion of disk ejection" is detected.

[0125] That is, the control circuit of a mechanism is distinguished from the thing in "the condition that 12cm disk reached to the completion detection location of disk ejection" based on such an operating condition of photosensors 4-PHs 7, and suspends rotation of the loading roller 33.

[0126] On the other hand, two photosensors 4 and PHs 5 of ** entrance side have maintained the condition of not detecting, at the time of disk insertion standby. The case where at least one side of two photosensors 6 and PHs 7 by the side of the back changes to a detection condition, ** When only one side of two photosensors 4 and PHs 5 of an entrance side changed and follows a detection condition and at least one side of two photosensors 6 and PHs 7 by the side of the back changes to a detection condition, "insertion of foreign matters other than 12cm disk" is detected.

[0127] Namely, the control circuit of a mechanism is based on such an operating condition of photosensors 4-PHs 7. "The condition in which foreign matters, such as the 8cm disk Ds, passed through between two photosensors 4 and PHs 5 of an entrance side (drawing 57 (A))", Or "the condition (drawing 57 (B) or drawing 57 (C)) that foreign matters, such as the 8cm disk Ds, passed either of the photosensors 4 and PHs 5 of one side of an entrance side" is detected, in this case, inverse rotation of the loading roller 33 is carried out, and it is discharged to it.

[0128] Thus, in the stage unit 30, by using four photosensors 4 and PHs 5, the 12cm disk D is identified certainly, and is inserted, and malfunction is prevented by eliminating the other foreign matter including the 8cm disk D. In addition, since it will become the same path as the 12cm disk D even if it is the 8cm disk Ds if the adapter 97 for 8cm disks is used as shown in above-mentioned drawing 9 , the same detection and playback as the 12cm disk D are attained.

[0129] (6) As shown in pickup detection device drawing 40 , near the leading screw 43 in drive base 40a, it is pressed by a part of screw holder 91, and the switch SW7 which detects that the pickup unit 44 is in a turntable 45 side rather than an initial valve position is formed. Furthermore, as shown in drawing 59 and drawing 60 , the switch SW8 which detects that the release location of disk chucking has the disk hook 94 is built in the side face by the side of the turntable 45 in the pickup unit 44 by contacting the supporter material of leading-screw 43 grade.

[0130] [-- D. -- operation] -- below, sequential explanation is given as actuation of the disk regenerative apparatus of a gestalt of this operation which was mentioned above about a series of actuation from receipt of a disk to disk playback, the return actuation after disk playback, and disk discharge actuation. In addition, housekeeping operation until drawing 61 contains a disk and considers as a playback standby condition, It is the flow chart which shows the outline of a series of actuation including disk selection / playback actuation from a disk playback standby condition to disk playback. Drawing 62 It is the flow chart which shows the outline of return actuation until it contains this disk to a disk holder after playing a disk, and it returns to a disk playback standby condition in preparation for the actuation for the next disk playback. In case drawing 63 is in a disk playback standby condition, it is a flow chart which shows the outline of disk discharge actuation when a disk ejection command is emitted.
[0131] [-- 1. --] of operation to disk playback -- the outline of the flow of actuation to disk playback is explained first, referring to drawing 61 . That is, in step 101, according to the location of empty disk holder #n which is going to insert a disk, the disk holder 21 is positioned in a disk loading possible location, and in continuing step 102, a shutter 52 is opened wide and it prepares for insertion of a disk (disk insertion standby condition). And in this condition, if a disk is inserted from the disk insertion opening 51, in the following step 103, that inserted disk will be drawn and will be contained in disk holder #n with the stock arm 36 in continuing step 104 with the loading roller 33. Here, when inserting two or more disks, steps 101-104 will be repeated according to the number of disks. Thus, after disk containing to a disk holder, the lock of the vibrationproofing device of a mechanism is canceled, and it prepares for playback of a disk by making a mechanism into floating (disk playback standby condition).
[0132] Based on a playback command, a selection command, etc. of a disk, disk selection / playback actuation of steps 106-112 is performed following the above housekeeping operation. That is, you progress to step 106, you make it go up and down the stage unit 30 first, and the side selection plates 4 and 5 are positioned in the separation location of the disk holder 21 according to the disk which it is going to play. Next, in step 107, the disk holder 21 above a separation location is gone up, and space is formed. Then, in step 108, the drive base unit 40 is inserted into said space by separation of the disk holder 21, and chucking of the disk is carried out on the turntable unit 45 in continuing step 109 with the combination of descent of actuation of the DIKUSU hook 94 and the some of the disk holder 21.
[0133] Furthermore, in step 110, after going up the disk holder 21 a little, a disk is pulled out from the inside of the disk holder 21 by moving the drive base unit 40 to the front a little. Finally, after going up the disk holder 21 in step 111, a disk is played in step 112. Below, actuation of each steps 101-112 is explained according to an individual. In addition, about this detection actuation, it omits and detection of the rotation location of the mode plate 3 is explained, although carried out press of the switch SW1 by press section 72c of the switch plate 72, and by detecting slit 3h with photosensor PH 1.
[0134] [Step 101: Disk holder positioning] First, as shown in drawing 2 , the mode plate 3 is an initial valve position P0. When it is, as shown in drawing 7 , between the upper disk guide 37 and the ROWA disk guides 38 is positioned so that it may come to the location corresponding to the disk insertion opening 51.
[0135] Then, by the 2nd motor 11, the disk holder 21 is moved up and down through the disk holder elevator style 12, and the disk holder 21 of a desired stage is positioned in a disk loading possible location. That is, the location of the n-th step of empty disk holder #n which is going to insert a disk moves the disk holder 21 up and down to the location which is in agreement with the disk insertion opening 51 of the shutter unit 50, and holds in this location.
[0136] A motion of the side selection plate 5 which shows this actuation to drawing 64 - drawing 66 explains more concretely. In addition, since an operation of cam-groove 4for division b in the side selection plate 4 of the opposite side and 4d of horizontal levels for evacuation is the same as that of the side selection plate 5, illustration is omitted. That is, in carrying out disk loading to disk holder #6, the side selection plates 4 and 5 are moved to back (method of drawing Nakamigi) from the initial state of drawing 64 , and it makes it projection 21a of disk holder #1 of the bottom come to the bottom of the cam grooves 4b and 5b for division, as shown in drawing 65 .
[0137] Moreover, in carrying out disk loading to disk holder #1, the side selection plates 4 and 5 are

moved further back, and it makes it projection 21a of disk holder #1 come to the horizontal levels 4d and 5d for evacuation of the maximum upper case of the cam grooves 4b and 5b for division, as shown in drawing 66 . Thus, by moving the disk holder 21, disk holder #1-#6 of a desired stage are positioned by the height (* in drawing shows) corresponding to the disk insertion opening 51. In addition, the above location detection of the side selection plates 4 and 5 is performed by detecting two or more slit 5g formed in the side selection plate 5 with photosensor PH 2.

[0138] In addition, since the top cams 24c and 25c are formed above the cam grooves 4b and 5b for division on both sides of projection 21e of the disk holder 21 which moves up, at the time of rise and fall of the disk holder 21, projection 21a of disk holder #6 of the maximum upper case is guided to top cam 24c. Therefore, it is stabilized and becomes smooth from the case where rise and fall of disk holder #6 are performed by only the cam grooves 4b and 5b for division.

[0139] [Step 102: Shutter disconnection] Following positioning of the above disk holders 21, by the 1st motor 1, the mode plate 3 is rotated clockwise and it considers as the shutter open position Pa 2 (drawing 49). Then, the Open door link 6 rotates to a shutter open position, and opens the shutter 52 of the shutter unit 50 fixed to the car side (drawing 48). At this time, since 6d of press sections of the Open door link 6 releases a switch SW2, the disk insertion standby condition of a mechanism is detected.

[0140] [Step 103: disk loading] -- if a disk is inserted from the disk insertion opening 51 in the state of the above disk insertion standby, two photosensors 4 and PHs 5 of an entrance side will change to a detection condition, and insertion of 12cm disk will detect -- having (drawing 56 (A)) -- by the 3rd motor 31, the loading roller 33 is rotated and Disk D is drawn. By such initiation of drawing in, if the end of Disk D moves in the inner part of a mechanism over the loading roller 33, two photosensors 6 and PHs 7 by the side of the back will change to a detection condition (drawing 56 (B)).

[0141] [Step 104: Disk receipt] If Disk D separates from the loading roller 33 by rotation of the above loading rollers 33 across the disk loading completion detection location shown in drawing 56 (B), two photosensors 6 and PHs 7 by the side of the back will change to the condition of not detecting, and the disk loading completion with the loading roller 33 will be detected. If it rotates to the counterclockwise rotation in drawing and the mode plate 3 in the shutter open position Pa 2 is moved to the disk pushing location Pa 1 (drawing 27) by the 1st motor 1 according to this detection, the drive plate 35 will move ahead through the stage power link 9. Then, the stock arm 36 rotates through the drive plate 35 and press plate 35e, and it is a stowed position D0. Disk D is pushed in.

[0142] More, in a detail, if the mode plate 3 moves to the disk pushing location Pa 1 as shown in drawing 27 , it will move to a rotation location and the stage power link 9 will press the suppressed area of the drive plate 35 by the press section 9c. Then, since it moves to a pushing location since press plate 35e also moves with migration of the drive plate 35, as the stock arm 36 pressed by press plate 35e rotated and shown in drawing 27 , the press section 36b is the disk maintenance location D0 about Disk D. It pushes in. Consequently, Disk D is contained in the disk holder 21, and is held by disk hold spring 21b.

[0143] In addition, since idler plate 32f pin 32g will come to the posterior part of grooved cam 35c of the drive plate 35 as shown in drawing 30 if the drive plate 35 moves in this way, idler gear 32b separates from gear train 32c by the side of a guide shaft, and the drive base unit 40 does not move.

[0144] [Step 105: lock discharge of a vibrationproofing device] -- by the above steps 101-104 Or after completing receipt of the disk of all (one sheet or two or more sheets) into the disk holder 21 by the repeat, the mode plate 3 -- the 1st motor 1 -- the counterclockwise rotation in drawing -- rotating -- initial valve position P0 from -- by making it move to the floating lock discharge location Pb1 Slide plates 13 and 14 are ahead moved through the link sections 13d and 14d, and the lock of a vibrationproofing device is canceled.

[0145] That is, as shown in drawing 50 , drawing 51 and drawing 53 (A), and (B), the engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 are engaging with the lock sections 61a, 61b, 62a, and 62b to which the damper plates 61 and 62 correspond, respectively at the time of disk loading, and the vibrationproofing device is locked.

[0146] From such a condition, as shown in drawing 50 , the mode plate 3 rotates. When the pins 18b and 19b of the discharge location 18 and 19, i.e., lock links, reach the bay of grooved cam 3b of the mode plate 3, slide plates 13 and 14 As shown in drawing 52 and drawing 54 (A), and (B), the lock links 18 and 19 are also rotated in a discharge location. The engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 separate from the damper unit 60, and the lock of a vibrationproofing device is canceled. Consequently, to a car, a mechanism is supported by floating through a damper 63 and the damper spring 64, and will be in a disk playback standby condition.
[0147] [Step 106: Disk holder separation location selection] In the above disk playback standby conditions, positioning of the stage unit 30 according to the disk which it is going to play is performed. In addition, the target disk is automatically determined in manual here based on a playback command, a selection command, etc. of a disk according to the playback program set up beforehand.
[0148] That is, as shown in drawing 6 , by rotating the 1st motor 1 and making the counterclockwise rotation in drawing rotate the mode plate 3 further, you move slide plates 13 and 14, you make it go up and down the stage unit 30, and it positions in the disk playback location according to the disk which it is going to play, i.e., the disk playback location according to the n-th step of disk holder #n holding the disk.
[0149] for example, when aimed at the 3rd step of disk holder #3 from the bottom As the mode plate 3 is rotated, slide plates 13 and 14 are moved through the pins 13e and 14e of grooved cam 3b straight-line on the staff and it is shown in drawing 67 You make it go up and down the stage unit 30 so that the acute sections 4f and 5f of the side selection plates 4 and 5 may come to the location corresponding to between the 3rd step of disk holder #3, and the 2nd step of disk holder #2.
[0150] Thus, when selection of the disk holder by rise and fall of the stage unit 30 is performed, as shown in drawing 26 , the stage power link 9 is moved to a position in readiness by cam-groove 3e of the mode plate 3. Then, since press section 9c of the stage power link 9 cancels the press to the drive plate 35, the drive plate 35 moves back according to the spring 35d energization force. And since the stock arm 36 is canceled of the press by press plate 35e, it rotates according to the energization force of torsion spring 36c, and it returns to an initial valve position.
[0151] In addition, at this time, as shown in drawing 29 , since it comes to the anterior part of grooved cam 35c of the drive plate 35, idler gear 32b engages with gear train 32c by the side of a guide shaft idler plate 32f pin 32g. Then, since stage gear 30c connects with the loading roller 33, stage gear 30c will be in a rotatable condition by the 3rd motor 31.
[0152] [Step 107: Disk holder separation] Following selection of the above separation locations, by rotating the 2nd motor 11, the upper selection plates 24 and 25 are moved horizontally, and the side selection plates 4 and 5 are moved in connection with this. Location detection of these side selection plates 4 and 5 is performed by detecting two or more slit 5g formed in the side selection plate 5 with photosensor PH 2.
[0153] Thus, in the example which chooses above disk holder #3, if the side selection plates 4 and 5 are moved, as shown in drawing 68 , projection 21a of disk holder #3-#6 located above 5f of acute sections will be pushed up up by cam-groove 5b for division. On the other hand, projection 21a of disk holder #1-#2 located below the acute sections 4f and 5f is caudad depressed by the top ramps 4e and 5e.
[0154] Then, since disk holder #3-#6 go up in one and disk holder #1-#2 move under the side selection plates 4 and 5, the disk holder 21 is divided. Therefore, the space for drive base unit insertion of selected disk holder #3 is formed caudad.
[0155] On both sides of projection 21e of the disk holder 21 which moves up, the top cams 24c and 25c are formed above the cam grooves 4b and 5b for division. In addition, under the top ramps 4e and 5e Since the bottom ramps 24d and 25d are formed on both sides of projection 21e of the disk holder 21 which moves caudad, at the time of separation of the disk holder 21 Projection 21a of disk holder #6 of the maximum upper case is guided to top cam 24c, and projection 21a of disk holder #1 of the bottom is guided to the bottom ramps 24d and 25d.
[0156] The drive base unit 40 is inserted in the formed space as a result of [Step 108: Drive base unit

insertion], then the above disk holder separation. Namely, at the time of disk holder separation, as mentioned above, the stage gears 30c and 30d connect with the loading roller 33, and 30d is in stage gear 30c and a rotatable condition by the 3rd motor 31. For this reason, by rotating the 3rd motor 31, as shown in drawing 33 -37, the stage gears 30c and 30d rotate, and drive base 40a carries out horizontal migration through the rack plate 47. By this horizontal migration, drive base 40a separates from the switch plate 39 shown in drawing 55 , according to the energization force of a spring, the switch plate 39 rotates and that press section 39a solves the press to a switch SW5.

[0157] And if drive base 40a moves to a location as shown according to the two-dot chain line in drawing from an initial valve position as shown as a continuous line in drawing 33 , since the edge of drive base 40a will press a switch SW6, it is detected that drive base 40a came to the chucking location. At this time, drive base 40a is positioned by engagement to the position spring 48 and notch 86a of the position plate 86 in a chucking location. Consequently, the drive base unit 40 is inserted into said space formed of disk holder separation, and is held in the location which laps with the disk with which the turntable unit 45 was held at the disk holder 21.

[0158] [Step 109: Disk chucking] After inserting the drive base unit 40 into said space as mentioned above, as shown in drawing 40 , by rotating the 4th motor 41, a leading screw 43 is rotated through the gear device 42, and the load discharge device of the disk hook 94 is operated using migration of the pickup unit 44.

[0159] That is, in an initial state, as shown in drawing 59 , although the pickup unit 44 is in the initial valve position to which the screw holder 91 is pressing the switch SW7, it is not in contact with communication shaft 43b of a load discharge device. For this reason, as shown in drawing 43 and drawing 45 , the 1st and 2nd chucking arms 95 and 96 are distant from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d with the energization force of spring 96e. Therefore, it is up according to the energization force of spring 94e chucking sleeve 94d, and the disk hook 94 energized by chucking sleeve 94d has the claw part 94a in a disk maintenance location.

[0160] If the 4th motor 41 is rotated and the pickup unit 44 is further moved to the turntable unit 45 side from this condition, as shown in drawing 60 , the switch SW8 of the pickup unit 44 will be pressed by the supporter material of a leading screw 43, and the edge of the pickup unit 44 will press communication shaft 43b. Then, as shown in drawing 44 and drawing 46 , by press section 42of communication shaft 43b b, the edge of the 1st chucking arm 95 is pressed, and the 1st chucking arm 95 and the 2nd chucking arm 96 resist the energization force of spring 96e, it rotates, and slant surface parts 95c and 96c contact a chucking sleeve 94d taper side. Therefore, since chucking sleeve 94d resists the energization force of spring 94e, moves caudad and energizes suppressed area 94b, the disk hook 94 rotates, and since claw part 94a moves to a disk release location, it will be in the condition that a disk can be positioned on the turntable unit 45.

[0161] To load discharge of the above disk hooks, then, by rotating the 2nd motor 11 Back is made to carry out slide migration of the side selection plates 4 and 5, as shown in drawing 69 . Projection 21a of disk holder #3 is moved into cam-groove 4for chucking c, and 5c from the horizontal levels 4d and 5d for evacuation. Only disk holder #3 are dropped, and Disk D is positioned on the turntable unit 45 so that claw part 94a of the disk hook 94 may go into the bore of the disk D held at this. In this case, since it is extended to the lower part a little rather than the location used as the height corresponding to the turntable unit 45, using the elasticity of selected disk holder #3, a disk is pushed on the turntable unit 45 and the lower limit of the cam grooves 4c and 5c for disk chucking is positioned certainly.

[0162] Following positioning of the above disks, as the 4th motor 41 is rotated further and it is shown in drawing 59 , the pickup unit 44 is moved to an initial valve position, and it separates from communication shaft 43b. Then, as shown in drawing 43 and drawing 45 , it rotates according to the energization force of spring 96e, and the 1st and 2nd chucking arms 95 and 96 separate from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d. Therefore, chucking sleeve 94d, it moves up according to the energization force of spring 94e, and the disk hook 94 energized by chucking sleeve 94d rotates, and the claw part 94a moves to a disk maintenance location. Consequently, claw part 94a of the disk hook 94 engages with the bore of Disk D, and holds Disk D certainly on the turntable

unit 45.
[0163] [Step 110: Disk drawer] By rotating the 3rd motor 31 and rotating the stage gears 30c and 30d following the above disk chucking, as shown in drawing 34 , from a chucking location, it is made to move to an initial-valve-position side a little, and the drive base unit 40 is positioned in a play location. This play location is detected by the photosensor PH 3 shown in drawing 39 . Moreover, in a play location, the position spring 48 of the drive base unit 40 engages with notch 86a of the center of the position plate 86.
[0164] The disk D by which chucking was carried out is pulled out from disk holder #3 against the energization force of disk hold spring 21b by the horizontal migration of such a drive base unit 40 on the turntable unit 45.
[0165] [Step 111: Disk holder rise] In the above disk chucking and a disk drawer, then, by rotating the 2nd motor 11 As the slide migration of the side selection plates 4 and 5 is made to carry out ahead and it is shown in drawing 70 and drawing 71 Projection 21a of disk holder #3 is returned to the horizontal levels 4d and 5d for evacuation from the cam grooves 4c and 5c for chucking, and it is made to go up to an upper part location again so that disk holder #3 may not become reproductive trouble.
[0166] [Step 112: Disk playback] The usual disk playback is performed after a series of above actuation. That is, while rotating the turntable unit 45 with a spindle motor 46, Disk D is played by carrying out horizontal migration of the pickup unit 44 by the 4th motor 41.
[0167] [2. The outline of the flow of return actuation] after disk playback, next the return actuation after disk playback is explained referring to the flow chart of drawing 62 . First, in step 201, the disk holder 21 in a rise location is dropped. Next, in step 202, the disk on the turntable unit 45 is contained in the disk holder 21 by moving the drive base unit 40 back. Then, in step 203, the load of the disk hook 94 is canceled and a disk is removed from the turntable unit 45 by raising the disk holder 21. Then, in step 204, the drive base unit 40 is returned to an initial valve position, and in continuing step 205, the disk holder 21 is dropped and it returns to an initial valve position.
[0168] And the following disk is reproducible by performing a series of disk selection / playback actuation (steps 106-112) which mentioned above another disk contained in the mechanism after disk playback following return actuation of the above steps 201-205 when reproducing continuously. Below, actuation of each steps 201-205 is explained according to an individual. In addition, in the following explanation, the example which holds the disk D after playback in disk holder #3 as well as an above-mentioned example is used.
[0169] [Step 201: Disk holder descent] Slide migration of the side selection plates 4 and 5 is carried out, and a disk holder is put into the cam grooves 4c and 5c for chucking from the horizontal levels 4d and 5d for evacuation, and it is made to descend to the height corresponding to the played disk D by rotating the 2nd motor 11, first, as shown in drawing 70 and drawing 69 . That is, disk holder #3 which re-hold the disk D drop disk holder #3 to the location used as the height corresponding to the disk D held on the turntable unit 45.
[0170] It is the selection playback location Pb of disk holder #3 which held the played disk as the mode plate 3 was shown at drawing 26 at the time of [disk Step 202: Receipt] disk playback termination. Since it is, a position in readiness has the stage power link 9. For this reason, as shown in drawing 29 , it is in the front end of grooved cam 35c of the drive plate 9 idler plate 32f pin 32g, and the gear device 32 for a level drive has connected the 3rd motor 31 with the stage gears 30c and 30d.
[0171] Therefore, a chucking location is made to carry out horizontal migration of the drive base unit 40 in a disk playback location again by rotating the 3rd motor 31, following descent of the above disk holders, as shown in drawing 33 . The disk held on the turntable unit 45 is inserted into disk holder #3 corresponding by the horizontal migration of such a drive base unit 40. In this case, Disk D overcomes disk hold spring 21b of both sides, arrives at the disk maintenance location in the disk holder 21, and is held by disk hold spring 21b in that location.
[0172] [Step 203: Disk removal] As mentioned above, after containing Disk D in a disk holder, as shown in drawing 40 , by rotating the 4th motor 41, a leading screw 43 is rotated through the gear device 42, and the load discharge device of a disk hook is operated using migration of the pickup unit

44.
[0173] That is, by making it move to a chucking discharge location as shows the pickup unit 44 to drawing 60 from an initial valve position as shown in drawing 59 by rotation of the 4th motor 41 like the time of disk chucking mentioned above, communication shaft 43b is pressed and the edge of the 1st chucking arm 95 is pressed by the press section 43c. Then, as shown in drawing 44 and drawing 46 , the 1st chucking arm 95 and the 2nd chucking arm 96 resist the energization force of spring 96e, and rotate, and slant surface parts 95c and 96d contact a chucking sleeve 94d taper side. Therefore, since chucking sleeve 94d resists the energization force of spring 94e, moves caudad and energizes suppressed area 94b, the disk hook 94 rotates, and claw part 94a moves to a disk release location, and will be in a dismountable condition from on the turntable unit 45 about Disk D.
[0174] To load discharge of the above disk hooks 94, then, by rotating the 2nd motor 11 As slide migration of the side selection plates 4 and 5 is carried out and it is shown in drawing 68 Projection 21a of disk holder #3 is moved to the horizontal levels 4d and 5d for stocker evacuation from the cam grooves 4c and 5c for disk chucking, disk holder #3 are raised, and the disk D held at this is removed from the turntable unit 45.
[0175] As such a disk D removes, and it is alike, then the 4th motor 41 is rotated further and it is shown in drawing 59 , the pickup unit 44 is returned to an initial valve position, and the press to communication shaft 42a is solved. Then, as shown in drawing 43 and drawing 45 , the 1st and 2nd chucking arms 95 and 96 separate from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d according to the energization force of spring 96e. And chucking sleeve 94d moves up according to the spring 94e energization force, the disk hook 94 by which it was energized by chucking sleeve 94d rotates, and the claw part 94a returns to a disk maintenance location (it removes and a disk is already ending).
[0176] [Step 204: Drive base unit return] The drive base unit 40 in a chucking location is returned to an initial valve position as shown as a continuous line in drawing 33 by the above disks' removing, and being alike, then rotating the 3rd motor 31.
[0177] [Step 205: Disk holder return] Following the return of the above drive base units 40, by rotating the 2nd motor 11, slide migration of the side selection plates 4 and 5 is carried out, and projection 21a of disk holder #3 is moved to the cam grooves 4b and 5b for division. Then, as shown in drawing 67 , disk holder #3-#6 descend and they return to a lower part location. On the other hand, downward projection 21a of disk holder #1-#2 also passes along the top ramps 4e and 5e, and exceeds the acute sections 4f and 5f. Then, it rotates according to the energization force of torsion spring 22c in the direction which plate 22a of a pantograph 22 closes, and the disk holder 21 currently divided up and down coalesces again.
[0178] In addition, since projection 21a of disk holder #6 is caudad energized by top cam 24c and projection 21a of disk holder #1 is energized up by the bottom ramp 2 when closing the disk holder 21, compared with the case where the disk holder 21 closes only according to the spring load of torsion spring 22c of a pantograph 22, it can close by the bigger force. Moreover, even if the sliding friction at the time of closing the disk holder 21 when the moment force of inclining to a before side by the self-weight of the disk holder 21 and a disk works increases, the disk holder 21 can be closed certainly.
[0179] [-- 3. -- disk discharge actuation] -- the outline of the flow of disk discharge actuation is explained further, referring to the flow chart of drawing 63 . First, in step 301, the vibrationproofing device of a mechanism is locked and a mechanism is changed into a fixed condition. In continuing step 302, the stage unit 30 is returned to an initial valve position. Next, in step 303, the disk holder 21 is positioned in the location which can be disk ejected according to the location of disk holder #n which is going to discharge a disk. Then, in step 304, while opening a shutter 52, with the ejection arm 7, a disk is extruded from the inside of disk holder #n, and the disk extruded from disk holder #n in continuing step 305 is discharged with the loading roller 33, and is moved from the disk insertion opening 51 to the location in which ejection is possible.
[0180] Moreover, when a disk ejection command is emitted at the time after disk playback, after performing return actuation after disk playback which was mentioned above (steps 201-205), disk

discharge actuation of the succeedingly above steps 301-304 will be performed. Below, actuation of each steps 301-305 is explained according to an individual.
[0181] [Step 301: lock of a vibrationproofing device] -- when the side selection plates 4 and 5 are returned to an initial valve position and the disk holder D is closed as mentioned above, slide plates 13 and 14 are in a discharge location as shown in drawing 50 , drawing 52 , and drawing 54 , it is separated from the damper plates 61 and 62 with the lock links 18 and 19, the lock of a vibrationproofing device is canceled, and the mechanism is supported by floating to the car. From this condition, when the mode plate 3 is rotated clockwise and only the migration stroke corresponding to the bottom of those stairway cams 13a and 14a moves slide plates 13 and 14, slide plates 13 and 14 and the lock links 18 and 19 are made to engage with the damper plates 61 and 62, respectively, as shown in drawing 51 and drawing 53 , and a vibrationproofing device is locked. Consequently, a mechanism is fixed to the location the disk insertion opening 51 of the shutter unit 50 and whose disk path 39 of the stage unit 30 correspond.
[0182] [Step 302: Stage unit return] When a floating lock is made as mentioned above, slide plates 13 and 14 are initial valve positions P0. Returning, the stage unit 30 comes to the lowest location. Therefore, a mechanism returns to a disk playback standby condition which was mentioned above.
[0183] [Step 303: Disk holder positioning] Following the lock of the above vibrationproofing devices, by rotating the 2nd motor 11, the disk holder 21 is raised through the disk holder elevator style 22, and it positions in the location which can be disk ejected. For example, as shown in drawing 65 or drawing 66 , when the disk D which it is going to discharge is held in the 6th step of disk holder #6, or the 1st step of disk holder #1, the location of disk holder #6 or disk holder #1 raises the disk holder 21 to the location which is in agreement with the disk insertion opening 51 of the shutter unit 50, and holds in this location.
[0184] [Step 304: Shutter disconnection and disk extrusion] Following positioning of the above disk holders 21, by rotating the 1st motor 1 further and moving the mode plate 3 to the shutter open position Pa 1 (drawing 49) which is an endmost part location, the Open door link 6 is moved to a shutter open position, and the shutter 52 of the shutter unit 50 fixed to the car side is opened (drawing 48). The ejection arm 7 rotates in a disk ejection location from a disk release location, and extrudes the disk D in disk holder #n to coincidence, and the loading roller 33 is made stuck to it by pressure by migration to such a shutter open position Pa 1 of the mode plate 3, as shown in drawing 58 .
[0185] [Step 305: Disk ejection] If Disk D is extruded from the inside of disk holder #n as mentioned above, two photosensors 6 and 7 by the side of the back will change to a detection condition, and the 3rd motor 31 will start. Then, rotation of the loading roller 33 begins and a disk moves to an eject direction. Thus, if discharge of a disk begins, when actuation will progress further and some disks D will project from the disk path of a mechanism, two photosensors 4 and 5 of an entrance side also change to a detection condition. And as Disk D shows drawing 56 (C), when it reaches to the completion detection location of disk ejection and the most finally projects from the inlet port of a disk path, two photosensors 4 and 5 by the side of the back change to the condition of not detecting, and the completion of disk ejection with the loading roller 33 is detected. Disk D is held from the disk insertion opening 51 with this loading roller 33 in the location in which ejection is possible by suspending the 3rd motor 31 and suspending the loading roller 33 at this time. Namely, a mechanism will be in a disk fetch standby condition.
[0186] [-- E. -- effectiveness] -- the effectiveness of the disk regenerative apparatus concerning the gestalt of these above operations is as follows. That is, the side selection plates 4 and 5 which make it go up and down the disk holder 21, the loading roller 33 which perform insert/eject of a disk, and the drive base unit 40 which perform playback of a disk be altogether form in the stage unit 30, the mutual physical relationship of the height direction be in the condition always kept constant, and the gestalt of this operation have composition which it go up and down united with the stage unit 30. Therefore, even if it is the case where you make it go up and down the disk holder 21 in order to carry out insert/eject of the disk, and the case where the disk holder 21 is made to separate in order to play a disk, while being able to perform easily exact alignment of the disk holder 21 chosen, and the loading roller 33 and the drive base unit 40, the synchronization of timing of operation can be taken correctly easily, and the

operational reliability of equipment is high.
[0187] Moreover, only by the device in which you make it go up and down the stage unit 30, since rise and fall of the side selection plates 4 and 5, the loading roller 33, and the drive base unit 40 are performed, drive / control configuration can be made small and simple.
[0188] Moreover, by using the single mode plate 3, by the 1st motor 1 which is the same driving source as the device in which you make it go up and down the stage unit 30, all of rotation of the ejection arm 7, rotation of the stock arm 36, and closing motion of a shutter 52 are realized, and simplification of a driving source is attained. And simplification of a driving source is attained also by making the device 32 for a level drive in which the horizontal migration of the drive base unit 40 and the drive of the loading roller 33 are driven by the 3rd same motor 31 serve a double purpose. Furthermore, many members of slide plates 13 and 14, the Open door link 6, the ejection arm 7, and stage power link 9 grade are controlled by the single mode plate 3, and all the various actuation, such as rise and fall of the stage unit 30, selection of the separation location of the disk holder 21, closing motion of a shutter 52, and receipt/discharge of a disk, can be controlled by the gestalt of this operation through these members with it. That is, with the single mode plate 3, the timing of the whole mechanism of operation can be adjusted easily, and components mark can also be lessened. Therefore, it combines also with a number of a driving source of reduction mentioned above, or simplification of a drive configuration, and-izing of the whole equipment can be carried out [small, simple, and lightweight].
[0189] Moreover, closing motion of a shutter 52 and the timing of actuation of an internal mechanism are appropriately controllable by the mode plate 3 by having constituted with the mode plate 3, so that it might control also about closing motion of a shutter 52 through the Open door link 6. Therefore, when an internal mechanism is in the condition in which disk insertion is impossible, inconvenient actuation in which a disk is inserted can be prevented certainly, and operational reliability can be improved. Moreover, invasion of foreign matters, such as moisture from the disk insertion opening 51 and dust, can be prevented as much as possible by opening a shutter 52 wide only at the time of disk loading/ejection, and other than this always blockading a shutter 52 then.
[0190] Moreover, although carried out by carrying out horizontal migration of the side selection plates 4 and 5, since rise and fall of the disk holder 21 use the inclined cam grooves 4b and 5b for division, they are short migration length and can realize large vertical movement of the disk holder 21. Therefore, even if it shortens depth of equipment and shortens the migration stroke of the side selection plates 4 and 5, it is convenient to rise and fall of the disk holder 21, and the miniaturization of equipment can be realized as a whole. And the cam grooves 4b and 5b for division have two or more horizontal levels, since they are stair-like, positioning of the height direction of the disk holder 21 becomes certain, and its dependability of operation improves. Furthermore, as structure for rise and fall prepared in the disk holder 21 side, since what is necessary is just to form projection 21a, the miniaturization of the configuration of the disk holder 21 and simplification are realizable.
[0191] Moreover, since projection 21e of the disk holder 21 is guided by the cam grooves 4b and 5b for division, the top cams 24c and 25c or the top ramps 4e and 5e, and the bottom ramps 24d and 25d from the upper and lower sides, it Rather than the case where it moves only by the cam grooves 4b and 5b for division, and the top ramps 4e and 5e, the stable smooth migration is attained and dependability of operation improves. Since projection 21a of the disk holder 21 is energized by top cam 24c and the bottom ramp 2 from the upper and lower sides when closing the disk holder 21 especially, the disk holder 21 can be certainly closed by the big energization force. Therefore, securing positive closing motion of the disk holder 21, reduction of the spring load of a pantograph 22 and reduction of the driving force of the side selection plates 4 and 5 are aimed at, and the miniaturization of equipment and laborsaving can be realized.
[0192] Moreover, since a load is adjusted by buffer plate 35f and spring 35g at the time of pushing of the disk D by the stock arm 36 even if there is dispersion in the outer diameter of Disk D or the tolerance of use components, Disk D can always be pushed in by the fixed load, and stability of operation and dependability improve.
[0193] Moreover, at the time of disk insert/eject, since four-point support of three projection 21e and 21f

of positioning lobes is made, wandering of the disk holder 21 is prevented and the disk holder 21 becomes the smooth thing by which migration of Disk D was stabilized.
[0194] Moreover, since discernment of the path of Disk D is identified and the loading roller 33 operates only at the time of 12cm disk with two photosensors 4 and PHs 5 formed in the disk insertion opening side, malfunction and failure of the foreign matter which makes 8cm disk the start by invasion can be prevented beforehand, and dependability improves.
[0195] Moreover, at the time of disk insert/eject, with the upper disk guide 37, the ROWA disk guide 38, and the side disk guides 37a and 37b, since Disk D is surely led between the loading roller 33 and ROWA roller 38c, even if the location gap with Disk D and the loading roller 33 arises, positive insert/eject of Disk D can be performed and dependability improves.
[0196] Moreover, with a switch SW7 and a switch SW8, since the pickup unit 44 can detect that it is in an initial valve position and a chucking release location, also when a function after [unexpected] out of control is recovered, the location of the pickup unit 44 can be grasped correctly and subsequent actuation can be performed smoothly.
[0197] Moreover, since the spacing is shorter than the die length of rack section 47a of the rack plate 47 a little, it is not necessary to secure the die length of rack section 47a by migration stroke, and since the rack plate 47 is sharply reducible, the miniaturization of equipment is realizable [the gear to which drive base 40a is moved is two / stage gears / 30c and 30d /, and].
[0198] Moreover, it did not need to be said that it extended spacing of each diaphragm 21a, and secured thickness in order to hold projection partial 97a since the bore of diaphragm 21a of the disk holder 21 is the magnitude which avoids projection partial 97of 8cm disk adapter 97a a. Therefore, the disk holder 21 can be reduced in the height direction, and the miniaturization of equipment can be realized.
[0199] It is not limited to the gestalt of said operation and, as for this invention, gestalten various otherwise can be carried [which it is [the gestalt of operation of others /. / F/]] out within the limits of this invention. That is, the concrete configuration of each unit is selectable suitably, and the concrete configuration and the arrangement of various kinds of members which are controlled by the mode plate or it are selectable suitably.
[0200] For example, numbers, such as a disk holder, a motor, a sensor, a switch, a gear, and a damper, are not limited to the gestalt of the aforementioned operation, and increase and decrease of modification are freely possible for them in the phase of a design. Moreover, it is possible to also make the function to drive the slide selection plates 13 and 14, the Open door link 6, the ejection arm 7, and the stage power link 9 share with two or more mode plates 3. Since the member made engaged can be distributed to each mode plate, in this case, each mode plate can be miniaturized, and the engagement configuration can be simplified to it. However, since the timing of the whole mechanism of operation can be adjusted easily and components mark can also be lessened by using a single mode plate as mentioned above, it is desirable to use a single mode plate generally.
[0201] Moreover, although an example of actuation of a disk regenerative apparatus was explained, concrete actuation of a disk regenerative apparatus is selectable in the gestalt of said operation, suitably according to a configuration. And the program of operation from which various kinds differ can be suitably set up to the equipment which has an equivalent mechanism. Furthermore, it is applicable to this invention not only at the equipment only for disk playbacks but the equipment for record / playback of a disk.
[0202]
[Effect of the Invention] Though it is a disk holder laminating and a separation actuation method as explained above, according to this invention, according to small and simple structure Selection and separation of a disk holder of a separation location according to the disk which it is going to play, Adjustment of the height of a drive base unit, insertion of the drive base unit into the space formed of this separation, It is possible to suitable timing to operate disk chucking etc. good, and the high disk regenerative apparatus of operational reliability and operability can be offered. Especially, according to this invention, it is small and simple to extent which can be carried in the location of the arbitration of a car, and it can be provided with a disk regenerative apparatus suitable as ambulance or vehicle

equipment.

[Translation done.]

* NOTICES *

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TECHNICAL FIELD

[Field of the Invention] This invention pulls out a disk from one of two or more of the disk holders by which the laminating was carried out, it carries out chucking to a drive base unit, it relates to the disk regenerative apparatus constituted so that a disk might be played, and is especially set at the time of disk playback. Instead of carrying out level actuation of two or more disk holders, space is formed using rise-and-fall actuation, and it is related with development of the disk regenerative apparatus which a drive base unit is inserted there and can play a disk.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] Conventionally, two or more disks are contained at a magazine, and the disk regenerative apparatus of the type constituted so that the disk chosen from two or more of these disks could be played automatically has spread widely. In this type of disk regenerative apparatus, the autochanger style for choosing automatically the disk used as the candidate for conveyance / playback based on the disk selection command inputted by a manual operation button, remote control, etc. or the program set up beforehand is prepared.
[0003] Moreover, while it had been positioned by it with the disk holder of dedication, on a drive base unit, level conveyance of the disk which maintenance of the disk within a magazine was generally performed according to the individual by the disk holder of the dedication according to the path of a disk, and was chosen by the autochanger style is carried out, and it is played. In addition, the drive base unit is prepared possible [rise and fall], and before a disk is pulled out, it moves to the height according to the selected disk.
[0004] being such -- a disk -- a regenerative apparatus -- a magazine -- containing -- having had -- plurality -- a disk -- a disk -- insertion - discharge -- actuation -- carrying out -- the need -- nothing -- a disk -- selection -- carrying out -- only -- as it is -- automatic -- being reproducible -- a point -- operability -- excelling -- **** . When it is going to play the disk which is not contained by the magazine on the other hand, attachment-and-detachment actuation of a magazine is needed, and it takes time and effort extremely. When playing only two or more disks again contained in the original magazine after playing only one disk which is not especially contained by the magazine, an operator has to do the activity which time and effort requires very much, in order to play the disk of one sheet.
[0005] When it is easy to enlarge equipment according to the number of sheets of a disk and the equipment dimension is limited like the disk unit for mount, there is also a trouble that the number of sheets of the disk which can be contained in a magazine will decrease in the disk regenerative apparatus which, on the other hand, used the magazine of such an attachment-and-detachment mold. This point is explained below.
[0006] First, since reinforcement sufficient when taken out outside, in order to protect two or more disks which it holds for the magazine detached and attached to equipment is required, the wall of the body of a magazine becomes quite thick, consequently a magazine enlarges it. Moreover, in order to perform horizontal migration of a disk holder, the slot and the rail section for a guide are prepared in the inside of a magazine side attachment wall. Since spacing between adjoining disk holders will also become large while the thickness of a magazine side attachment wall increases further if such a slot and the rail section are formed, the height dimension of a magazine increases.
[0007] Furthermore, in order to pull out a disk in the case of playback of the disk contained by the magazine, it is necessary to prepare a sufficient room in one [at least] front-face side of a disk. If such space is beforehand established in a magazine, according to the number of sheets of a disk, the height of a magazine will become high. Moreover, when the height dimension is limited like the disk unit for mount, the number of sheets of the disk which can be contained in a magazine will decrease.
[0008] While containing automatically recently the disk which incorporated two or more disk holders in

the state of the laminating in equipment, without using the magazine of an attachment-and-detachment mold, and was inserted from disk insertion opening to this disk holder from such a situation, development of the disk regenerative apparatus which can discharge the contained disk automatically is furthered.

[0009] According to such a disk regenerative apparatus, an operator can exchange disks easily by making discharge actuation and insertion actuation of a disk perform automatically. That is, after removing push and the discharged disk for the manual operation button and key which are an object for discharge, a disk is exchangeable without the need of detaching and attaching a magazine, only by inserting the following disk in disk insertion opening. Furthermore, the whole equipment can be miniaturized compared with the case where a magazine is used.

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EFFECT OF THE INVENTION

[-- E. -- effectiveness] -- the effectiveness of the disk regenerative apparatus concerning the gestalt of these above operations is as follows. That is, the side selection plates 4 and 5 which make it go up and down the disk holder 21, the loading roller 33 which perform insert/eject of a disk, and the drive base unit 40 which perform playback of a disk be altogether form in the stage unit 30, the mutual physical relationship of the height direction be in the condition always kept constant, and the gestalt of this operation have composition which it go up and down united with the stage unit 30. Therefore, even if it is the case where you make it go up and down the disk holder 21 in order to carry out insert/eject of the disk, and the case where the disk holder 21 is made to separate in order to play a disk, while being able to perform easily exact alignment of the disk holder 21 chosen, and the loading roller 33 and the drive base unit 40, the synchronization of timing of operation can be taken correctly easily, and the operational reliability of equipment is high.
[0187] Moreover, only by the device in which you make it go up and down the stage unit 30, since rise and fall of the side selection plates 4 and 5, the loading roller 33, and the drive base unit 40 are performed, drive / control configuration can be made small and simple.
[0188] Moreover, by using the single mode plate 3, by the 1st motor 1 which is the same driving source as the device in which you make it go up and down the stage unit 30, all of rotation of the ejection arm 7, rotation of the stock arm 36, and closing motion of a shutter 52 are realized, and simplification of a driving source is attained. And simplification of a driving source is attained also by making the device 32 for a level drive in which the horizontal migration of the drive base unit 40 and the drive of the loading roller 33 are driven by the 3rd same motor 31 serve a double purpose. Furthermore, many members of slide plates 13 and 14, the Open door link 6, the ejection arm 7, and stage power link 9 grade are controlled by the single mode plate 3, and all the various actuation, such as rise and fall of the stage unit 30, selection of the separation location of the disk holder 21, closing motion of a shutter 52, and receipt/discharge of a disk, can be controlled by the gestalt of this operation through these members with it. That is, with the single mode plate 3, the timing of the whole mechanism of operation can be adjusted easily, and components mark can also be lessened. Therefore, it combines also with a number of a driving source of reduction mentioned above, or simplification of a drive configuration, and-izing of the whole equipment can be carried out [small, simple, and lightweight].
[0189] Moreover, closing motion of a shutter 52 and the timing of actuation of an internal mechanism are appropriately controllable by the mode plate 3 by having constituted with the mode plate 3, so that it might control also about closing motion of a shutter 52 through the Open door link 6. Therefore, when an internal mechanism is in the condition in which disk insertion is impossible, inconvenient actuation in which a disk is inserted can be prevented certainly, and operational reliability can be improved. Moreover, invasion of foreign matters, such as moisture from the disk insertion opening 51 and dust, can be prevented as much as possible by opening a shutter 52 wide only at the time of disk loading/ejection, and other than this always blockading a shutter 52 then.
[0190] Moreover, although carried out by carrying out horizontal migration of the side selection plates 4 and 5, since rise and fall of the disk holder 21 use the inclined cam grooves 4b and 5b for division, they

are short migration length and can realize large vertical movement of the disk holder 21. Therefore, even if it shortens depth of equipment and shortens the migration stroke of the side selection plates 4 and 5, it is convenient to rise and fall of the disk holder 21, and the miniaturization of equipment can be realized as a whole. And the cam grooves 4b and 5b for division have two or more horizontal levels, since they are stair-like, positioning of the height direction of the disk holder 21 becomes certain, and its dependability of operation improves. Furthermore, as structure for rise and fall prepared in the disk holder 21 side, since what is necessary is just to form projection 21a, the miniaturization of the configuration of the disk holder 21 and simplification are realizable.

[0191] Moreover, since projection 21e of the disk holder 21 is guided by the cam grooves 4b and 5b for division, the top cams 24c and 25c or the top ramps 4e and 5e, and the bottom ramps 24d and 25d from the upper and lower sides, it Rather than the case where it moves only by the cam grooves 4b and 5b for division, and the top ramps 4e and 5e, the stable smooth migration is attained and dependability of operation improves. Since projection 21a of the disk holder 21 is energized by top cam 24c and the bottom ramp 2 from the upper and lower sides when closing the disk holder 21 especially, the disk holder 21 can be certainly closed by the big energization force. Therefore, securing positive closing motion of the disk holder 21, reduction of the spring load of a pantograph 22 and reduction of the driving force of the side selection plates 4 and 5 are aimed at, and the miniaturization of equipment and laborsaving can be realized.

[0192] Moreover, since a load is adjusted by buffer plate 35f and spring 35g at the time of pushing of the disk D by the stock arm 36 even if there is dispersion in the outer diameter of Disk D or the tolerance of use components, Disk D can always be pushed in by the fixed load, and stability of operation and dependability improve.

[0193] Moreover, at the time of disk insert/eject, since four-point support of three projection 21e and 21f of positioning lobes is made, wandering of the disk holder 21 is prevented and the disk holder 21 becomes the smooth thing by which migration of Disk D was stabilized.

[0194] Moreover, since discernment of the path of Disk D is identified and the loading roller 33 operates only at the time of 12cm disk with two photosensors 4 and PHs 5 formed in the disk insertion opening side, malfunction and failure of the foreign matter which makes 8cm disk the start by invasion can be prevented beforehand, and dependability improves.

[0195] Moreover, at the time of disk insert/eject, with the upper disk guide 37, the ROWA disk guide 38, and the side disk guides 37a and 37b, since Disk D is surely led between the loading roller 33 and ROWA roller 38c, even if the location gap with Disk D and the loading roller 33 arises, positive insert/eject of Disk D can be performed and dependability improves.

[0196] Moreover, with a switch SW7 and a switch SW8, since the pickup unit 44 can detect that it is in an initial valve position and a chucking release location, also when a function after [unexpected] out of control is recovered, the location of the pickup unit 44 can be grasped correctly and subsequent actuation can be performed smoothly.

[0197] Moreover, since the spacing is shorter than the die length of rack section 47a of the rack plate 47 a little, it is not necessary to secure the die length of rack section 47a by migration stroke, and since the rack plate 47 is sharply reducible, the miniaturization of equipment is realizable [the gear to which drive base 40a is moved is two / stage gears / 30c and 30d /, and].

[0198] Moreover, it did not need to be said that it extended spacing of each diaphragm 21a, and secured thickness in order to hold projection partial 97a since the bore of diaphragm 21a of the disk holder 21 is the magnitude which avoids projection partial 97of 8cm disk adapter 97a a. Therefore, the disk holder 21 can be reduced in the height direction, and the miniaturization of equipment can be realized.

[0199] It is not limited to the gestalt of said operation and, as for this invention, gestalten various otherwise can be carried [which it is [the gestalt of operation of others /. / F/]] out within the limits of this invention. That is, the concrete configuration of each unit is selectable suitably, and the concrete configuration and the arrangement of various kinds of members which are controlled by the mode plate or it are selectable suitably.

[0200] For example, numbers, such as a disk holder, a motor, a sensor, a switch, a gear, and a damper,

are not limited to the gestalt of the aforementioned operation, and increase and decrease of modification are freely possible for them in the phase of a design. Moreover, it is possible to also make the function to drive the slide selection plates 13 and 14, the Open door link 6, the ejection arm 7, and the stage power link 9 share with two or more mode plates 3. Since the member made engaged can be distributed to each mode plate, in this case, each mode plate can be miniaturized, and the engagement configuration can be simplified to it. However, since the timing of the whole mechanism of operation can be adjusted easily and components mark can also be lessened by using a single mode plate as mentioned above, it is desirable to use a single mode plate generally.

[0201] Moreover, although an example of actuation of a disk regenerative apparatus was explained, concrete actuation of a disk regenerative apparatus is selectable in the gestalt of said operation, suitably according to a configuration. And the program of operation from which various kinds differ can be suitably set up to the equipment which has an equivalent mechanism. Furthermore, it is applicable to this invention not only at the equipment only for disk playbacks but the equipment for record / playback of a disk.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, as mentioned above, two or more disk holders are built in in the state of a laminating, and when only carrying out both-way actuation of the disk holder horizontally as usual in developing the disk regenerative apparatus which can carry out insert/eject of the disk automatically to this disk holder (it is hereafter called a level round trip actuation method), the dimension of equipment cannot fully be reduced.
[0011] That is, since it is necessary to return the disk holder advanced to the position on a drive base unit to the initial valve position which does not influence disk playback to position the disk to a drive base unit top with the disk holder of a level round trip actuation method, for the center to center of the disk in a stowed position, and the disk on a drive base unit, the distance beyond the radius of a disk will be needed at least, and, only in the part, the horizontal dimension of equipment will become large at it. Moreover, since it is necessary to secure a certain amount of [respectively] spacing from the slot and the rail section for a guide being prepared in order to perform level round trip actuation of a disk holder between adjoining disk holders, it is difficult to reduce the height dimension of the whole disk holder.
[0012] Space is formed by making one side of the selected disk holder into a separation location to the disk holder of such a level round trip actuation method using rise-and-fall actuation of the disk holder of one side of this separation location, or both sides, and adoption of the method (it is hereafter called a laminating and a separation actuation method) which inserts a drive base unit there and plays a disk is also considered. A horizontal dimension can be made into min, without considering actuation of only a disk holder, increasing the height dimension of the operating range of a disk holder at least compared with the case where a level round trip actuation method is adopted, when such a laminating and a separation actuation method are adopted. This point is explained briefly.
[0013] First, when a laminating and a separation actuation method are adopted, according to an initial state, contiguity arrangement of the whole disk holder can be carried out in the form where between adjoining disk holders is approached or contacted. Moreover, space will be formed only in any one internal and external place of two or more disk holders by going up and down the whole disk holder in one at the time of disk playback, or dissociating by one place, and although this space is larger than spacing between the disk holders with which it adjoins in the case of a level round trip actuation method, it will be equivalent extent if compared with the sum total of those spacing.
[0014] Moreover, level round trip actuation is made performed to a drive base unit instead of not operating a disk holder horizontally, when a laminating and a separation actuation method are adopted. In this case, the disk playback location of the drive base unit which can be set horizontally can be set as the location of the arbitration which laps with a disk holder, and if a drive base unit is moved out of range [that path of operation] only at the time of rise-and-fall actuation of a disk holder, it can make the horizontal dimension of equipment min by coming out enough and minimizing the dimension of a drive base unit for a certain reason.
[0015] However, when the above laminating and separation actuation methods are adopted, it is necessary to go up and down a disk holder simply, but to change separation actuation of the whole disk holder a top [need / the separation location which forms space / to be chosen] according to a separation

location. Thus, from the need of making complicated actuation performing to a disk holder, it is easy to complicate the drive configuration of a disk holder. Moreover, about a drive base unit, since not only rise-and-fall actuation but level actuation is needed, the actuation is also complicated and a drive configuration tends to complicate it. Furthermore, it is difficult to adjust appropriately the timing of the whole mechanism containing the disk holder which performs such complicated actuation, or a drive base unit of operation.

[0016] It is proposed in order that this invention may solve the trouble of the above conventional techniques. The 1st purpose Though it is a disk holder laminating and a separation actuation method, according to small and simple structure Selection and separation of a disk holder of a separation location according to the disk which it is going to play, Adjustment of the height of a drive base unit, insertion of the drive base unit into the space formed of this separation, It is possible to suitable timing to operate disk chucking etc. good, and it is offering the high disk regenerative apparatus of operational reliability and operability.

[0017] Especially the 2nd purpose of this invention is small and simple to extent which can be carried in the location of the arbitration of a car, and is offering a disk regenerative apparatus suitable as ambulance or vehicle equipment.

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MEANS

[Means for Solving the Problem] In order to attain the above purposes, this invention The disk insertion section which carries out insert/eject of the disk, and two or more disk holders which hold two or more disks according to an individual, While choosing a desired disk holder out of the disk holder by which two or more laminatings were carried out to the drive base unit which plays the disk held at the desired disk holder A disk holder rise-and-fall means to go up and down said all or a part of disk holder, and to form the space which can insert a drive base unit, The drive conveyance means to which said drive base unit is moved between the space formed of rise and fall of said disk holder, and the space by the side of said disk insertion section, While drawing the disk inserted from said disk insertion section and making maintenance possible at said disk holder In the disk regenerative apparatus equipped with a disk insert/eject means to discharge a disk in a receipt and said disk insertion section, it has the following technical features from said disk holder.
[0019] That is, invention according to claim 1 is characterized by having the stage unit which supports said disk holder rise-and-fall means and said drive base unit, and a stage rise-and-fall means to make it go up and down said stage unit according to the location of the selected disk holder. In the above invention according to claim 1, since the drive base unit is supported by the stage unit with the disk holder rise-and-fall means, only rise and fall of the stage unit by the stage rise-and-fall means can perform at once the insertion point arrangement of selection of a disk holder and a drive base unit which makes it go up and down. Therefore, though it is a simple configuration, alignment of a mechanism can be made exact and timing of operation can be determined appropriately.
[0020] Invention according to claim 2 is characterized by forming said disk insert/eject means in said disk insertion section side in said drive base unit in a disk regenerative apparatus according to claim 1. Although it is necessary to make it go up and down a disk holder, to choose the disk holder which carries out insert/eject of the disk, and to carry out alignment to a disk insert/eject means with a disk holder rise-and-fall means in the above invention according to claim 2 at the time of disk insert/eject, since both the disk holder rise-and-fall means and the disk insert/eject means are formed in the stage unit, alignment following selection of a disk holder can be performed correctly and easily, and operational reliability increases.
[0021] Invention according to claim 3 is set to a disk regenerative apparatus according to claim 1 or 2. Said disk holder rise-and-fall means It has the cam member equipped with the sloping cam side. Said cam member It is characterized by preparing the follower which is prepared in a disk insert/eject direction movable, contacts the cam side of said cam member at said each disk holder, and is energized by migration of said cam member in at least the upper part or a lower part either in said drive base unit. In the above invention according to claim 3, since you make it go up and down a disk holder by moving the sloping cam side to a disk insert/eject direction, the migration stroke of a cam member required in order to go up or drop a disk holder can be shortened. Therefore, the die length of the disk insert/eject direction of a mechanism becomes short, and equipment is miniaturized.
[0022] It is characterized by invention according to claim 4 having a stair-like part corresponding to the rise-and-fall location of said disk holder in the cam side in said cam member in a disk regenerative

apparatus according to claim 3. in the above invention according to claim 4, by each stage of a stair-like part, since a disk holder can be certainly held to a position, a disk holder carries out location appearance and precision improves.

[0023] In a disk regenerative apparatus according to claim 3 or 4, invention according to claim 5 is characterized by continuing and preparing the guidance cam which it shows to the follower of the disk holder concerned in said cam side until the disk held at the disk holder chosen as said cam member according to the migration moves to a refreshable location in said drive base unit. In the above invention according to claim 5, separation of a disk holder and not only insert/eject positioning of a disk holder but positioning of a up to [the drive base unit of the disk to play] can also be performed by moving a cam member to a disk insert/eject direction, and making it go up and down a disk holder. Therefore, one cam member will make many functions serve a double purpose, a configuration member decreases, and a device is miniaturized and simplified.

[0024] Invention according to claim 6 is characterized by establishing the sub cam side parallel to said cam side on both sides of the follower of said disk holder in said cam side and the location which counters at said cam member in a disk regenerative apparatus given in any 1 term of claims 3-5. In the above invention according to claim 6, since the follower of a disk holder slides on between a cam side and sub cam sides, rise and fall of a disk holder are guided from the upper and lower sides, and dependability of operation improves.

[0025] In a disk regenerative apparatus given in any 1 term of claims 1-6, invention according to claim 7 near said disk insert/eject means in said stage unit A stock arm is prepared rotatable. Said stock arm It has the press section which pushes in the disk inserted from said disk insertion section to the back of a disk holder by the rotation. To said stage unit The energization means which energizes said stock arm and is rotated in the disk pushing direction is formed in a disk insert/eject direction movable, and said energization means is characterized by having the elastic member which adjusts the energization force. In the above invention according to claim 7, since the energization force is adjusted by the buffer member prepared in the energization means even if there is dispersion in the outer diameter of a disk or the tolerance of use components, the load which joins a disk from a stock arm can be set always constant, and disk pushing actuation is stabilized.

[0026] In a disk regenerative apparatus given in any 1 term of claims 1-7, a positioning member is prepared in said disk holder, and invention according to claim 8 is characterized by having the positioning supporter which supports the positioning member of the disk holder chosen at the time of disk insert/eject near said De Dis holder at it. In the above invention according to claim 8, at the time of disk insert/eject, since the positioning member of a disk holder is supported by the positioning supporter, wandering of a disk holder is prevented and the insert/eject of a disk becomes smooth.

[0027] In a disk regenerative apparatus given in any 1 term of claims 1-8, invention according to claim 9 has two disk detecting elements larger than the diameter of 8cm disk, and is characterized by being prepared at spacing narrower than the diameter of 12cm disk at the disk insertion section side near said disk insert/eject means. In the above invention according to claim 9, when foreign matters, such as 8cm disk, are inserted from the disk insertion section, neither of two disk detecting elements reacts, or only one of disk detecting elements reacts. Thus, when invasion of a foreign matter is detected, by not carrying out actuation of a disk insert/eject means, malfunction and failure of a foreign matter by drawing in are prevented, and dependability improves.

[0028] Invention according to claim 10 is set to a disk regenerative apparatus given in any 1 term of claims 1-9. Said disk insert/eject means It has the loading roller and follower roller to which a disk is pinched and moved from the upper and lower sides. To said disk insertion section side near [said] the loading roller The upper disk guide and ROWA disk guide which guide migration of a disk from the upper and lower sides are prepared. Said follower roller While being prepared in the direction which attaches and detaches on said loading roller movable It is energized in the direction stuck to said loading roller by pressure by the elastic member, and the edge of said upper disk guide or said ROWA disk guide is characterized by carrying out engagement support at the shank of said follower roller. In the above invention according to claim 10, since engagement support of the edge of an upper disk guide or a

ROWA disk guide is carried out at the shank of a follower roller, at the time of insertion of a disk, a disk is certainly led between a loading roller and a follower roller with an upper disk guide and a ROWA disk guide.
[0029] Invention according to claim 11 is characterized by preparing the side disk guide which guides migration of a disk from right and left in the disk holder side near said disk insert/eject means in a disk regenerative apparatus given in any 1 term of claims 1-10. In the above invention according to claim 11, with a side disk guide, at the time of insertion of a disk, a disk is certainly led in a disk holder, and a disk is certainly led between a loading roller and a follower roller at the time of discharge of a disk.
[0030] Invention according to claim 12 is set to a disk regenerative apparatus given in any 1 term of claims 1-11. Said drive base unit The turntable unit in which the disk to play is laid, and the spindle motor made to rotate said turntable unit, A chucking means to hold a disk on said turntable unit, By migration by the side of said turntable of the pickup unit which detects the signal recorded on the disk according to migration in the direction of a path of a disk, and said pickup unit It is characterized by having a chucking discharge means to cancel the disk maintenance by said chucking means, and a location detection means to detect that said pickup unit is in an initial valve position and a chucking discharge location. In the above invention according to claim 12, since it can grasp correctly whether a pickup unit is in an initial valve position at the unexpected time of out of control, or it is in a chucking discharge location with a location detection means, malfunction after control function recovery is prevented and dependability improves it.
[0031] As for said drive base unit, invention according to claim 13 has the rack section in a disk regenerative apparatus given in any 1 term of claims 1-12, it has at least two drive gears to which said drive conveyance means engages and releases said rack section, and said drive base unit is moved, and spacing of said drive gears is characterized by being shorter than the die length of said rack section. In the above invention according to claim 13, since the drive of the rack section is shared by two or more drive gears, the die length of the rack section can be made shorter than the migration stroke of a drive base unit, and equipment is miniaturized.
[0032] In a disk regenerative apparatus given in any 1 term of claims 1-13, said disk holder has a wrap diaphragm for a part of disk top face, respectively, and invention according to claim 14 is characterized by forming in the disk bore side of said diaphragm slitting of magnitude which avoids the projection part of the adapter for 8cm disks.
[0033] In the above invention according to claim 14, since the lap of the projection part and diaphragm is avoidable with slitting even if it uses the adapter for 8cm disks, a disk holder can be formed thinly and equipment is miniaturized.
[0034]
[Embodiment of the Invention] Below, the gestalt of one operation of the disk regenerative apparatus for mount which applied this invention is concretely explained with reference to a drawing. In addition, in the following drawings, the transverse-plane side of a disk regenerative apparatus is made into the front, a tooth-back side is made into back, it sees from a transverse-plane side, and left-hand side is made into a left and right-hand side is made into the method of the right.
[0035] [A. Whole configuration] drawing 1 is the decomposition perspective view showing the outline of the whole disk regenerative apparatus. As shown in this drawing 1 , the disk regenerative apparatus consists of the ROWA chassis unit 10, the upper chassis unit 20, the stage unit 30, a drive base unit 40, a shutter unit 50, and a damper unit 60.
[0036] Here, between the upper chassis unit 20 and the stage unit 30, six disk holders 21 (#1-#6) are formed possible [rise and fall] in the laminating condition. Moreover, the stage unit 30 is supported by the ROWA chassis unit 10 possible [rise and fall], and the drive base unit 40 is supported by the inferior surface of tongue of this stage unit 30 possible [horizontal migration].
[0037] On the other hand, the shutter unit 50 and the damper unit 60 are attached in the car side fixed, respectively, and the mechanism which consists of the ROWA chassis unit 10, the upper chassis unit 20, a stage unit 30, and a drive base unit 40 is attached by floating to this damper unit 60.
[0038] [-- B. -- outline] of the configuration of each unit -- the outline of the above configurations of

each unit is briefly explained with reference to drawing 1 .
[0039] [1. The ROWA chassis unit] ROWA chassis unit 10 is constituted so that the driving force from the 1st motor 1 may perform rise and fall (selection of the separation location of the disk holder 21) of the stage unit 30, closing motion of the shutter unit 50, the disk insertion / discharge to the disk holder 21, a driving force transfer change to the drive base unit 40, immobilization/discharge of a vibrationproofing device, etc. by rotating the mode plate 3 through the gear device 2. In order to control various kinds of members and to make the above-mentioned actuation perform, two or more cams and press sections are formed in this mode plate 3.
[0040] moreover, the slide plates 13 and 14 of the pair for stage unit rise and fall in the medial surface of right and left of the ROWA chassis unit 10 -- rotation of the mode plate 3 -- following -- respectively -- order -- hard flow -- a slide -- it is prepared movable. Furthermore, the Open door link 6 which opens and closes the shutter 52 of the disk insertion opening 51, the ejection arm (ejection member) 7 which performs disk ejection are formed in the ROWA chassis unit 10 rotatable. These members are controlled according to the rotation location of the mode plate 3, and have the composition that an active position changes.
[0041] [2. The disk holder elevator style 22 which makes it go up and down the disk holder 21 (#1-#6) is formed in the upper chassis unit] upper chassis unit 20. By making the 2nd motor 11 into a driving source, and carrying out slide migration of the side selection plates 4 and 5 prepared in the stage unit 30 through two or more gear and upper selection plates 24 and 25 in order, this disk holder elevator style 22 is constituted so that rise and fall of the disk holder 21, division, and selection may be performed.
[0042] [3. The loading roller 33 is formed in the anterior part of the stage unit] stage unit 30 as a disk insert/eject means at the longitudinal direction. Moreover, the guide shaft 34 of a cross direction is formed near the medial surface of Hidari of the stage unit 30. The loading roller 33 and the drive base unit 40 mentioned later are formed possible [a drive] according to the gear device 32 for a level drive by making the 3rd motor 31 into a driving source.
[0043] [-- 4. -- the guide shaft 34 with which the drive base unit] drive base unit 40 was formed in the stage unit 30 -- meeting -- order -- a slide -- it is prepared movable. The rack plate 47 is attached in the left end of the drive base unit 40. And when this rack plate 47 drives according to the gear device 32 for a level drive, it has composition which the drive base unit 40 moves.
[0044] Moreover, the pickup unit 44 is formed in the drive base unit 40. This pickup unit 44 is supported by the leading screw 43 arranged at the longitudinal direction, and has composition which the pickup unit 44 moves by transmitting the driving force from the 4th motor 41 to a leading screw 43 through the gear device 42 for a pickup drive. Furthermore, the turntable 45 is formed pivotable by the spindle motor 46.
[0045] [5. The shutter 52 which opens and closes the disk insertion opening 51 and this is formed in front panel 50a of the shutter unit] shutter unit 50. The shutter 52 is attached in the door plate 53 in one, and opens and closes the disk insertion opening 51 according to actuation of the door plate 53. Here, the door plate 53 is controlled by the mode plate 3 mentioned above through the Open door link 6, and changes to a downward lock out location or an upper open position according to the rotation location of the mode plate 3.
[0046] [6. The damper unit] damper unit 60 is equipped with the damper plates 61 and 62 of a Uichi Hidari pair attached in a car side, and the damper 63 and the damper spring 64 of a pair are prepared in each damper plates 61 and 62, respectively. That is, the mechanism which consists of the chassis units 10 and 20, a stage unit 30, and a drive base unit 40 is supported by floating through four dampers 63 and four damper springs 64 to a car in order to decrease the extraneous vibration at the time of disk playback.
[0047] [C. The configuration and function of each unit are explained more to the detail] pan of the configuration and function of each unit at a detail, referring to drawing 1 - drawing 60 below.
[0048] [1. ROWA chassis unit]
(1) Device drawing 2 for a mode change is the top view showing the initial state of the ROWA chassis unit 10, and drawing 3 is rear view. Moreover, drawing 4 and drawing 5 are the side elevations showing

actuation of slide plates 13 and 14, and are equivalent to X view Fig. of drawing 2 , and Y view Fig., respectively. First, as shown in drawing 2 , the mode plate 3 is arranged rotatable focusing on shaft 3a at the core on chassis 10a. Moreover, as shown in drawing 2 and drawing 3 , the 1st motor 1 and the gear device 2 are formed in the right rear corner on chassis 10a. And a rack is formed in the right rear edge of the mode plate 3, and when the gear device 2 engages with this rack, the mode plate 3 has composition rotated with the driving force of the 1st motor 1.

[0049] Here, the mode plate 3 is an initial valve position P0. Disk insert/eject location Pa Disk selection playback location Pb It rotates in between, and according to the rotation location, it is constituted so that two or more members may be controlled by grooved cams 3b-3f and 3g of press sections, respectively. That is, the mode plate 3 is constituted so that the ejection arm 7 may be controlled by 3g of press sections, while controlling the Open door link 6, the stage power link 9, and the switch plate 72 by Cams 3b-3f, respectively in addition to the slide plates 13 and 14 of a pair mentioned above.

[0050] The configuration and function of these members which are controlled by the above mode plates 3 are as follows. namely, the medial surface of right and left of the ROWA chassis unit 10 -- a slide -- as shown in the slide plates 13 and 14 prepared movable at drawing 4 and drawing 5 , two articles of stairway cams 13a and 14a are formed at a time, respectively. As for stairway cam 13a of a slide plate 13, and stairway cam 14a of a slide plate 14, the inclination serves as hard flow mutually. And as shown in drawing 2 , the horizontal plane which made it crooked inside in accordance with the angle of the ROWA chassis unit 10 is established, and the link sections 13d and 14d extended to the cams 3b and 3c of the mode plate 3 are formed in this horizontal plane at the lower part of slide plates 13 and 14. And Pins 13e and 14e were formed in the link sections [13d and 14d] edge, and these pins 13e and 14e have inserted in Cams 3b and 3c.

[0051] The stage power link 9 is established in the ROWA chassis unit 10 rotatable focusing on shaft 9a. Pin 9b inserted in cam 3e to which the mode plate 3 corresponds is prepared in the end of this stage power link 9. Press section 9c which energizes ahead suppressed area 35b prepared in the lower part of the drive plate 35 shown in drawing 1 is prepared in the other end of the stage power link 9. It is constituted so that the stage power link 9 may be rotated according to the rotation location of the mode plate 3 and the drive plate 35 may be ahead moved by this configuration.

[0052] The Open door link 6 is formed rotatable focusing on shaft 6a. Pin 6b inserted in cam 3f of the mode plate 3 is prepared in the end of this Open door link 6. Moreover, engagement section 6c which operates the door plate 53 shown in drawing 1 is prepared in the other end of the Open door link 6. Therefore, according to the rotation location of the mode plate 3, it rotates between a shutter lock out location and a shutter open position, and the Open door link 6 is constituted so that the shutter 52 shown in drawing 1 may be opened and closed. And according to the active position, 6d of press sections which turn on and off mechanically the switch SW2 which constitutes the control circuit of a mechanism is prepared in the Open door link 6.

[0053] Furthermore, the switch plate 72 is formed in the location contiguous to the Open door link 6 on chassis 10a rotatable focusing on shaft 72a. Pin 72b inserted in cam 3d of the mode plate 3 is prepared in the end section of this switch plate 72. And press section 72c which turns on and off mechanically the switch SW1 which constitutes a control circuit according to the active position of the mode plate 3 is prepared in the other end of the switch plate 72.

[0054] The ejection arm 7 is formed rotatable focusing on shaft 7a, as shown in drawing 1 and drawing 2 . While engagement section 7b which engages with 3g of press sections to which the mode plate 3 corresponds is prepared, spring 7c which energizes this ejection arm 7 to a disk release side is prepared in this ejection arm 7. Therefore, according to the rotation location of the mode plate 3, it rotates between a disk release location and a disk ejection location, and the ejection arm 7 is constituted so that the disk contained in the disk holder by actuation to this disk ejection location may be extruded in the location stuck to the loading roller 33 by pressure. Furthermore, two or more slit 3h corresponding to each active position of the mode plate 3 is formed in the first transition of the mode plate 3.

[0055] This mode plate 3 is the disk insert/eject location Pa by rotation of the clockwise rotation in drawing. It shifts and is the disk selection playback location Pb by rotation of the counterclockwise

rotation in drawing. It shifts. more -- a detail -- the mode plate 3 -- initial valve position P0 from -- it rotates to the clockwise rotation in drawing -- alike -- following -- the disk pushing location Pa 1 and the shutter open position Pa 2 -- shifting -- initial valve position P0 from -- it rotates to the counterclockwise rotation in drawing -- it is alike, and it follows and shifts to the floating lock discharge location Pb1 and the stage unit rise-and-fall location Pb2.

[0056] Moreover, the next table 1 shows the relation between the active position of such a mode plate 3, and the active position of two or more members controlled by it. In addition, drawing 6 explained below, and 27, 49, 50 and 58 show the control state of each part material in each active position of the stage unit rise-and-fall location Pb2 (drawing 6), the disk pushing location Pa 1 (drawing 27), the shutter open position (disk ejection location) Pa 2 (drawing 49 , 58), and the floating lock discharge location Pb1 (drawing 50) as an active position where the mode plates 3 differ, respectively.

[0057]

[Table 1]

モードプレート3の動作位置	ディスク挿排位置 Pa		初期位置Po	ディスク選択再生位置Pb	
	シャッタ開放位置Pa2	ディスク押込位置Pa1		フローティングロック解除位置Pb1	ステージユニット昇降位置Pb2
	(図49, 58)	(図27)	(図2)	(図50)	(図6)
スライドプレート13, 14の動作位置	フローティングロック			フローティングロック解除	
ドアオープンリンク6の動作位置	シャッタ開放	シャッタ閉鎖			
イジェクトアーム7の動作位置	ディスクイジェクト	ディスク解放			
ステージパワーリンク9の動作位置	待機位置	回動位置	待機位置		
スイッチプレート72の動作位置	スイッチ解放		スイッチ押圧	スイッチ解放	

(2) Device drawing 4 -7 for stage unit rise and fall are drawing showing the configuration for rise and fall of the stage unit 30 by the slide plates 13 and 14 of a pair. Here, drawing 6 and drawing 7 are the top views and front views of a mechanism, respectively. First, as shown in drawing 4 and drawing 5 , a pair each pin 30b prepared in the both sides of stage 30a in the stage unit 30 is inserted in the stairway cams 13a and 14a of the slide plates 13 and 14 of a pair, respectively. As this configuration shows to drawing 4 -7, the stage unit 30 moves to the height determined by six steps of each stage of the stairway cams 13a and 14a with level actuation of slide plates 13 and 14.

[0058] That is, as the continuous line in drawing 4 - 7 shows, when the pins 13e and 14e of slide plates 13 and 14 are in the initial valve position of a straight-line part, the stage unit 30 is in the lowest location. And as the two-dot chain line in drawing shows, when the pins 13e and 14e of slide plates 13 and 14 arrive at the endmost part location of a straight-line part, the stage unit 30 is constituted so that the best location may be arrived at.

[0059] (3) Disk holder drawing 8 and drawing 9 are the top views showing the configuration of the disk holder held in the state of the laminating at the ROWA chassis unit 10. As shown in this drawing 8 ,

each disk holder 21 is constituted by diaphragm 21a which is the plate of C typeface, and disk attachment component 21b prepared in those right and left. As shown in drawing 9 , the magnitude of the radii inside this diaphragm 21a is formed more greatly than the bore of the adapter 97 for 8cm disks, and as shown in drawing 10 and drawing 11 , it is the magnitude to which diaphragm 21a does not lap with projection 97a of an adapter 97. Moreover, as shown in drawing 8 , between diaphragm 21a, hold section 21c which supports the edge of the inserted disk from the bottom gives fixed spacing to disk attachment component 21b, and is formed in it.

[0060] And disk hold spring 21d of the pair for disk maintenance is arranged at right and left of the entrance side (method of drawing Nakashita) of each disk holder 21, respectively. Disk hold spring 21d of this pair, as shown in drawing 9 , when a disk is in the predetermined maintenance location in the disk holder 21, press maintenance of the disk is carried out by one edge at the back side (method of drawing Nakagami) of the disk holder 21. Moreover, projection 21e which engages with each cam groove of the side selection plates 4 and 5 mentioned later is prepared in two places of one place of the posterior part of a left lateral, the anterior part of a right lateral, and a posterior part at the lateral surface of disk attachment component 21b. Furthermore, as shown in drawing 12 - drawing 14 , 21f of positioning lobes of an abbreviation rectangular parallelepiped configuration is horizontally formed in the left lateral anterior part of the disk holder 21.

[0061] six pieces (hereafter referred to as #1-#6 from the bottom) carry out the laminating of the disk holder 21 of this configuration -- having -- each -- projection 21e of disk holder #1-#6 and 21f of positioning lobes are perpendicularly located in a line. As shown in these disk holder #1-#6 drawing 8 and drawing 9 , and drawing 15 -19, while tubed guide sleeve 21g of a perpendicular direction penetrates to two places of right and left, 21h of guide holes is formed near the 21g of this penetration section, respectively.

[0062] On the other hand, as shown in chassis 10a at drawing 1 and drawing 15 , 1st guide pin 10b and 2nd guide pin 10c are being fixed perpendicularly. And disk holder #1-#6 are supported by chassis 10a by inserting this 1st guide pin 10b in guide sleeve 21g, and inserting 2nd guide pin 10c in 21h of guide holes. these -- each -- rise and fall of disk holder #1-#6 have composition guided by guide sleeve 21f and 2nd guide pin 10c. In addition, as shown in drawing 16 -19, 1st guide pin 10b has the die length which can be guided irrespective of the rise-and-fall location of disk holder #1-#6, and 2nd guide pin 10c has the die length from which it separates from 21h of guide holes of the disk holder which went up, when disk holder #1-#6 are divided.

[0063] Furthermore, between disk holder #1 of the disk holder #6 and the bottom of the maximum upper case, as shown in drawing 8 , it is connected by the pantograph 22 prepared in the left rear side face and right lateral. This pantograph 22 is the member which two plates 22a was made to cross and concluded that intersection part rotatable, as shown in drawing 20 . The end section of two plates 22a is attached in the lateral surface of disk holder #6 and disk holder #1 rotatable, respectively, as shown in drawing 21 .

[0064] Slide pin 22b is prepared in the other end of two plates 22a, and each slide pin 22b is inserted in it at slide slot 21i formed in the lateral surface of disk holder #6 and disk holder #1. Limb 21j with which slide pin 21h engages is formed in the edge of this slide slot 21i. And since two plates 22a is energized in the direction mutually closed by torsion spring 22c, the disk holder 21 whole is energized by disk holder #6 and #1 in the direction closed from the upper and lower sides.

[0065] [-- 2. -- upper chassis unit] -- the configuration of the upper chassis unit 20 equipped with the device for making it go up and down the above disk holders 21 is explained. In addition, for drawing 22 , a top view and drawing 23 are [a right side view and drawing 25 of rear view and drawing 24] left side views. That is, as shown in drawing 22 , two or more gears are arranged superficially on the top face of chassis 20a of the upper chassis unit 20. This gear train is constituted by two major-diameters gear 12b which tells rotation of driving-side gear train 12a by the side of the 2nd motor 11, and this driving-side gear train 12a to the racks 24a and 25a of the upper selection plates 24 and 25.

[0066] and the upper selection plates 24 and 25 -- the right and left on the top face of chassis 20a -- order -- a slide -- it is prepared movable. The lateral portions 24b and 25b perpendicularly crooked in that side edge are formed in this upper selection plate 24. The stair-like top cams 24c and 25c which

become high toward the front are formed in the upper part of these lateral portions 24b and 25b, and the bottom ramps 24d and 24d which become low toward the front are formed in the lower part of lateral portions 24b and 24c.
[0067] Moreover, the side selection plates 4 and 5 are connected with the upper selection plates 24 and 25 as follows. namely, the side selection plates 4 and 5 -- the medial surface of right and left of the stage unit 30 -- order -- a slide -- it is prepared possible [rise and fall] with the stage unit 30 movable. On the other hand, Pins 24e and 25e are formed near the lower limit section of the top cam grooves 24c and 25c of the upper selection plates 24 and 25. and the guide slots 4a and 5a of the shape of an up-and-down straight line where these pins 24e and 25e were formed in the side selection plates 4 and 5 -- a slide -- it is inserted in movable.
[0068] Therefore, the side selection plates 4 and 5 are constituted by engagement into Pins 24e and 25e and the guide slots 4a and 5a so that it may move with the longitudinal slide movement of the upper selection plates 24 and 25. And since Pins 24e and 25e carry out slide migration of the inside of guide slot 4a and 5a even if the upper selection plates 24 and 25 move up and down with vertical movement of the stage unit 30, the side selection plates 4 and 5 have composition which is not interlocked with vertical movement of the stage unit 30.
[0069] While the stair-like cam grooves 4b and 5b for division which counter the side selection plates 4 and 5 in parallel with the top cam grooves 24c and 25c of the upper selection plates 24 and 25 are formed, the top ramps 4e and 5e which counter in parallel with the bottom ramps 24d and 25d are formed. Moreover, the cam grooves 4c and 5c for chucking are formed in the side selection plates 4 and 5. These cam grooves 4c and 5c for chucking are slitting formed in the slanting lower part toward the front from the upper limit of the cam grooves 4b and 5b for division. These cam grooves 4c and 5c for chucking are extended to near the pars intermedia of the height direction in the side selection plates 4 and 5, and the horizontal level is prepared in that lower limit.
[0070] And the horizontal levels 4d and 5d for evacuation are formed in the branch point of the cam grooves 4c and 5c for chucking, and the cam grooves 4b and 5b for division. Furthermore, the branch point of the cam grooves 4c and 5c for division and the top ramps 4e and 5e serves as the acute sections 4f and 5f. Moreover, two or more slit 5g corresponding to each active position of the side selection plate 5 is formed in the upper limb of the side selection plate 5 on the left-hand side of the stage unit 30.
[0071] in addition, it mentions later -- as -- each -- projection 21a in disk holder #1-#6 is constituted by the cams 4b and 5b for division of the side selection plates 4 and 5, the cam grooves 4c and 5c for chucking, the horizontal levels 4d and 5d for evacuation, the top ramps 4e and 5e, and the acute sections 4f and 5f so that it may be energized in the vertical direction. And the side selection plates 4 and 5 go up and down with rise and fall of the stage unit 30, and they are constituted so that the separation location of the disk holder 21 may be chosen.
[0072] [3. Stage unit]
(1) The gear organization charts 26 -32 for a level drive are drawings showing the configuration of the disk passage section circumference of the stage unit 30, and, for drawing 26 and drawing 27 , a top view and drawing 28 are [left lateral perspective drawing and drawing 31 of a front view, drawing 29 , drawing 30 , and drawing 32] right lateral perspective drawing. First, the gear device 32 for a level drive for driving the loading roller 33 and the drive base unit 40 is constituted as follows. That is, as shown in drawing 1 , drawing 29 , and drawing 30 , the drive plate 35 is formed in the left medial surface of the stage unit 30. the pin which guide slot 35a of the shape of a straight line of order was formed, and was prepared in this guide slot 35a at the stage unit 30 is inserted in this drive plate 35 -- the drive plate 35 -- order -- a slide -- it is prepared movable.
[0073] Moreover, as mentioned above, the drive plate 35 is connected with the mode plate 3 through the stage power link 9. That is, as shown in drawing 26 and drawing 27 , suppressed area 35b is prepared in the lower limit of the drive plate 35, and when this suppressed area 35b is energized by press section 9c of the stage power link 9, the longitudinal slide movement of the drive plate 35 has composition controlled according to the rotation location of the mode plate 3. Furthermore, the drive plate 35 is back energized by spring 35d.

[0074] And as shown in drawing 29 and drawing 30 , two stage gears 30c and 30d are formed in the left lateral of the stage unit 30. While these stage gears 30c and 30d are mutual, they are prepared in the same direction rotatable by 32d of gear trains. In addition, stage gears [30c and 30d] spacing is arranged at spacing [a little] shorter than the die length of rack section 47a of the rack plate 47 shown in drawing 1 . They are such stage gears 30c and 30d with the configuration that rotation of the loading roller 33 is transmitted, through gear train 32c by the side of a guide shaft. That is, left pinion 33b is prepared in the left end section of the loading roller 33, and this left pinion 33b is engaging with the end of gear train 32c by the side of a guide shaft. And the other end of gear train 32c by the side of a guide shaft is prepared in idler gear 32b possible [engaging and releasing]. Idler gear 32b is prepared in the idler plate 32f front end section, and is always connected to 32d of gear trains between stage gears through connection gear 32e.
[0075] It is prepared in the left lateral of the stage unit 30 rotatable idler plate 32f at connection gear 32e and the same axle. And it is inserted in grooved cam 35c prepared in the front end of the drive plate 35 pin 32g prepared in the idler plate 32f back end. When it is in the posterior part of pin 32g fang furrow cam 35c as it has the level difference to which that front end becomes low, and it is shown in drawing 29 , and idler gear 32b engages with gear train 32c by the side of a guide shaft and it is shown in drawing 30 , when it is in the front end of pin 32g fang furrow cam 35c, this grooved cam 35c is constituted so that idler gear 32b may separate from gear train 32c by the side of a guide shaft.
[0076] And as shown in drawing 26 and drawing 27 , near the loading roller 33, the stock arm (stock member) 36 is formed rotatable focusing on shaft 36a. The stock arm 36 has press section 36b which pushes in the disk which is separated from the loading roller 33 to the predetermined maintenance location in the disk holder 21 by the rotation. Moreover, the stock arm 36 is energized with the torsion spring which is not illustrated at the side which releases a disk.
[0077] The device in which such a stock arm 36 is rotated is constituted as follows. that is, it is shown in drawing 26 and drawing 27 -- as -- the back of the stock arm 36 -- press plate 35e -- order -- a slide -- it is prepared movable. The front end of this press plate 35 is prepared in the back end of the stock arm 36 possible [attachment and detachment] according to that migration. On the other hand, as shown in drawing 29 and drawing 30 , buffer plate 35f is prepared in the location which laps with the drive plate 35 at the posterior part of the drive plate 35. this buffer plate 35 -- the drive plate 35 -- receiving -- small -- order -- a slide -- it is prepared movable and is ahead energized by spring 35g attached between the drive plates 35.
[0078] And the this buffer plate 35f part is prepared in the back end of press plate 35e possible [attachment and detachment] according to migration of the drive plate 35, as shown in drawing 27 and drawing 28 . Therefore, rotation of the stock arm 36 has composition controlled according to the location of the drive plate 35 which moves by this with rotation of the mode plate 3, and press plate 35e. Furthermore, as shown in drawing 12 -14, drawing 26 , and drawing 27 , 35h of positioning supporters is formed in the common-law marriage of press plate 35e. 35h of this positioning supporter is the small plate prepared in parallel with two steps of upper and lower sides, and it is a member which 21f of positioning lobes of the disk holder 21 is inserted, and holds the disk holder 21 according to that longitudinal slide movement.
[0079] (2) Explain the configuration of disk loading / ejection device, next the disk loading / ejection device in the stage unit 30. That is, as shown in drawing 28 , the upper disk guide 37 and the ROWA disk guide 38 which guide insertion and discharge of Disk D from the upper and lower sides are prepared in the anterior part of the stage unit 30. And as shown in drawing 31 , the 3rd motor 31 is formed in the right end of the inferior surface of tongue of the ROWA disk guide 38 in the stage unit 30. The 3rd motor 31 is connected with gear train 32a by the side of the motor of the gear device 32 for a level drive prepared in the right medial surface of the stage unit 30. And right pinion 33a is prepared in the right end of the loading roller 33, and the driving force of the 3rd motor 31 has composition always transmitted to right pinion 33a through gear train 32a by the side of a motor.
[0080] Moreover, as shown in drawing 32 , the upper disk guide 37 is being fixed to the monotonous inferior surface of tongue of stage 30a, and the loading roller 33 is arranged at the back side of this

upper disk guide 37. This loading roller 33 is formed in the location which separates from this disk, before the disk drawn at the time of disk insertion arrives at the predetermined maintenance location in the disk holder 21. Under the upper disk guide 37 and the loading roller 33, the ROWA disk guide 38 vacates spacing, is arranged, and forms the disk path.

[0081] Pivot 38a is prepared in the loading roller 33 and the location which counters in parallel and up and down, and **** of the ROWA disk guide 38 is supported by this pivot 38 rotatable at the back side of this ROWA disk guide 38. ROWA roller 38c which follows on the loading roller 33 and pinches a disk between the loading rollers 33 is prepared in the perimeter of pivot 38a.

[0082] Furthermore, the both ends of pivot 38a are energized by spring 38b of a pair in the upper part, i.e., the direction which ROWA roller 33c sticks to the loading roller 33 by pressure, while they are supported by support plate 30e of the pair prepared in the stage 30a side possible [vertical movement]. Moreover, as shown in drawing 26 , the edge of right and left of a disk is inserted in and the side disk guides 37a and 37b which guide migration of a disk are formed in the disk holder 21 side near the both ends of the loading roller 33 and ROWA roller 38c. In addition, the side elevation of the side disk guides 37a and 37b is shown in drawing 39 and drawing 55 which are mentioned later. The taper side is established in the entry part of the slot through which the edge of a disk passes at the time of disk discharge to the disk holder 21 side of these side disk guides 37a and 37b.

[0083] By the above configurations, while rotating the loading roller 33 through the gear device 32 for a level drive with the driving force of the 3rd motor 31, a disk is pinched between the loading roller 33 and ROWA roller 38c, and horizontal migration of the disk D is carried out. That is, when the disk is not inserted, ROWA roller 38c is energized by spring 38b in the upper part location stuck to the loading roller 33 by pressure. This ROWA roller 38c resists the energization force of spring 38b, and is caudad depressed by the pushing force at the time of a disk being inserted. In this case, since **** of the ROWA disk guide 38 is also depressed caudad, the clearance which introduces the inserted disk D is formed between the upper disk guides 37, and drawing in with the loading roller 33 is made to start smoothly.

[0084] (3) As mentioned above, according to the rotation location of the stage power link 9, rotate the stock arm 36 through the drive plate 35, and receipt of the disk D to the disk receipt disk holder 21 to a disk holder is the disk maintenance location D0 about Disk D. It pushes in. That is, when a position in readiness (drawing 2 , drawing 6 , drawing 49 , drawing 50 , drawing 58) has the stage power link 9, the drive plate 35 is also back according to the spring 35d energization force, and since the stock arm 36 is held at the initial valve position, it influences a disk in any way. On the other hand, since the drive plate 35 resists the spring 35d energization force when the stage power link 9 moves to a rotation location (drawing 27), and it moves ahead, the stock arm 36 rotates, and it is the disk maintenance location D0 about Disk D. It pushes in. In addition, at the time of such pushing, when buffer plate 35f prepared between the drive plate 35 and press plate 35e carries out slide migration and spring 35g is extended, the load added from the stock arm 36 is absorbed and adjusted.

[0085] In addition, as mentioned above, when the mode plate 3 is in the disk pushing location Pa 1, the stage power link 9 rotates and the drive plate 35 and press plate 35e move ahead. For this reason, as shown in drawing 12 -14, according to migration of press plate 35e, 21f of positioning lobes of the disk holder 21 is inserted into 35f of positioning supporters. Therefore, the support for 21f of positioning lobes will also join three over three projection 21e further, and the supporting point of the disk holder 21 will be supported by four places at the time of disk insert/eject.

[0086] (4) Horizontal migration drawing 33 -39 of a drive base unit are drawing showing the configuration for the horizontal migration of the drive base unit 40 in the stage unit 30, and, for drawing 33 and drawing 34 , a top view and drawing 35 -37 are [a front view and drawing 39 of a left side view and drawing 38] right side views.

[0087] namely, the rack plate 47 with which rack section 47a was formed in the guide shaft 34 prepared in the stage unit 30 at the upper edge part as shown in drawing 35 -37 -- a slide -- it is prepared movable. And this rack section 47a is prepared possible [engagement on the stage gears 30c and 30d prepared in the left medial surface of the stage unit 30] (drawing 29 , 39). As mentioned above in addition, stage

gears [30c and 30d] spacing Since it is arranged at spacing [a little] shorter than the die length of rack section 47a, drive base 40a It has movable composition in the location (drawing 35) where rack section 47a engages only with stage gear 30d, the location (drawing 36) which engages with both whose rack section 47a is the stage gears 30c and 30d, and the location (drawing 37) where rack section 47a engages only with stage gear 30c. Furthermore, the left end of drive base 40a is attached in the lower limit of the rack plate 47.

[0088] on the other hand, it is shown in the right end of drive base 40a at drawing 33 and drawing 34 -- as -- the position plate 86 -- order -- a slide -- it is prepared movable. Two or more notch 86a is formed in the edge of the position plate 86, and when the edge of the position spring 48 established in the corner of the position plate 86 at drive base 40a engages with this notch 86a, it has the composition that drive base 40a is positioned. Furthermore, regulation pawl 86b projected on right-hand side is prepared in the anterior part of the position plate 86. slit 30f on the straight line of the cross direction formed in the right lateral of the stage unit 30 as this regulation pawl 86b was shown in drawing 38 and drawing 39 -- a slide -- it is inserted in movable. In addition, although this slit 30 is formed shorter than the movement magnitude of the stage unit 30, it has the composition that the movement magnitude of the stage unit 30 is secured, by slide migration of the position plate 86.

[0089] [4. Drive base unit]

(1) Delivery device drawing 40 -42 of a pickup unit are drawing showing the configuration of the delivery device of the pickup unit 44 in the drive base unit 40, and drawing 40 is [a front view and drawing 42 of a top view and drawing 41] side elevations. In addition, in these drawing 40 -42, from a viewpoint which shows a delivery device clearly, a drawing is simplified and the configuration which is not related a delivery device and directly is omitted.

[0090] First, as shown in drawing 40 and drawing 41 , along with the longitudinal direction, the leading screw 43 is arranged at drive base 40a. The edge by the side of the turntable 45 of this leading screw 43 is connected with the end of lead shaft 43a by the gear. The other end of this lead shaft 43a is connected with the 4th motor 41 through the gear device 42 for a pickup drive. Therefore, the driving force of the 4th motor 41 has composition transmitted to a leading screw 43 through the gear device 42 for a pickup drive, and lead shaft 43a.

[0091] And the end of the pickup unit 44 is supported by the leading screw 43, and the other end is supported by drive base 40a. That is, the screw holder 91 is formed in the end of the pickup unit 44. As the screw holder 91 is shown in drawing 42 , it has the cross section of an abbreviation L typeface which consists of vertical panel 91a and horizontal plate 91b, and the edge of horizontal plate 91b is being fixed to the pickup unit 44. Vertical panel 91a of the screw holder 91 is arranged so that a leading screw 43 may be pinched between the side faces of the pickup unit 44. And two or more engagement projection 91c which engages with the screw section of a leading screw 43 is prepared in the field which counters the leading screw 43 of vertical panel 91a. In addition, since elastic support of a part of engagement projection 91c is carried out and it is energized with the tabular screw holder spring 92 at the leading-screw 43 side, it is prevented with backlash.

[0092] Moreover, as shown in drawing 42 , the flat spring 93 is formed in the inferior surface of tongue of the other end of the pickup unit 44. guide-rail 40b by which this flat spring 93 was fixed to drive base 40a -- receiving -- the pickup unit 44 -- a slide -- movable, since elastic support is carried out, as for the pickup unit 44, rotation and backlash are prevented. By the above configurations, the pickup unit 44 carries out slide migration along with a leading screw 43 with rotation of the leading screw 43 by the driving force of the 4th motor 41.

[0093] (2) Turntable unit drawing 43 - drawing 46 are drawings showing the configuration of the turntable unit 45 circumference in the drive base unit 40, and the front view, drawing 45 , and drawing 46 in which drawing 43 and drawing 44 include an important section cross section are a top view. In addition, in these drawing 43 -46, in order to show the configuration of the turntable unit 45 circumference clearly, some members are omitted.

[0094] That is, as shown in drawing 43 , the direct drive of the turntable 45 is carried out by the spindle motor 46 arranged in piles caudad. The chucking device for holding a disk on this turntable 45 is

explained below. Three disk hooks 94 which engage with the bore of Disk D are formed in the crowning of a turntable 45 at equal intervals. Claw part 94a which engages with the bore of Disk D is prepared in the outside of this disk hook 94, and, inside, suppressed area 94b horseshoe-shaped in the longitudinal section is prepared. And the disk hook 94 is formed rotatable between the disk maintenance location where claw part 94a engages with the bore of Disk D centering on supporting-point 94c, and the disk release location from which it separates from the bore of Disk D. In addition, although it calls in and has become a taper, since the disk hook 94 is constituted so that it may be completely contained in this calling-in taper when [which upheaved in the approximate circle column configuration] it rotates in a disk release location, an excessive load does not arise at the time of chucking of Disk D, and chucking discharge, and the center section of the turntable 45 does not spoil the guidance function of the bore of the disk D by the calling-in taper, either.

[0095] Moreover, between the turntable 45 and the spindle motor 46, chucking sleeve 94d of the abbreviation spool configurations of these and the same axle is prepared possible [vertical movement]. The chucking sleeve 94d upper part serves as a disk configuration of a minor diameter, and the periphery edge is located in the character of KO of suppressed area 94b. And since it is energized up by spring 94e chucking sleeve 94d, the upper limit of suppressed area 94b is pressed up by the chucking sleeve 94d upper part, and the disk hook 94 is energized at the disk maintenance location side. On the other hand, the chucking sleeve 94d lower part serves as a disk configuration of a major diameter, and the taper side of breadth is established in the periphery at last.

[0096] (3) the load discharge device of a disk hook -- as shown in drawing 45 and drawing 46 , the 1st chucking arm 95 and the 2nd chucking arm 96 are formed in chucking sleeve 94d above near. The 1st chucking arm 95 is formed rotatable focusing on shank 95a on drive base 40a, and the projection is prepared in this shank 95a. Moreover, engaged point 95b which is a projection is prepared in the pars intermedia of the 1st chucking arm 95. And slant surface part 95c which attaches and detaches to a chucking sleeve 94d taper side by the rotation is prepared in shank 95a of the 1st chucking arm 95, and an opposite end.

[0097] On the other hand, the end of the 2nd chucking arm 96 is prepared rotatable focusing on shank 96a on drive base 40a. Engagement hole 96b in which engaged point 95b was inserted is prepared in the pars intermedia of this 2nd chucking arm 96, and the 1st chucking arm 95 and the 2nd chucking arm 96 are formed in the location which crosses considering engaged point 95b as an intersection. engagement hole 96b is formed in the magnitude which had mist and allowances from engaged point 95b -- having -- **** -- the inside of engagement hole 96b -- engaged point 95b -- a constant rate -- it is prepared movable. Moreover, 96d of slant surface parts which attach and detach to the taper side of chucking sleeve 94c by the rotation is established in shank 96a of the 2nd chucking arm 96, and an opposite end. And engagement section 96c which is notching which engages with the projection of shank 95a is formed near the 96d of the slant surface parts in the 2nd chucking arm 96.

[0098] Furthermore, the 2nd chucking arm 96 is energized by spring 96e attached near the engagement hole 96b in the direction in which 96d of slant surface parts separates from chucking sleeve 94c. Therefore, slant surface part 95c is energized in the direction which separates from chucking sleeve 94c through engaged point 95b to which the 1st chucking arm 96 also engaged with engagement hole 96b of the 2nd chucking arm 96.

[0099] moreover -- a location parallel to lead shaft 43a [/ near the turntable unit 45] as shown in drawing 40 and drawing 41 -- communication shaft 43b -- right and left -- a slide -- it is prepared movable. The end of this connection shaft 43b is prepared in the edge of the pickup unit 44 possible [attachment and detachment], as shown in drawing 45 and drawing 46 . And large press section 43c of a path is prepared in the pars intermedia of communication shaft 43b. furthermore -- the edge by the side of shank 95a in the 1st chucking arm 95 -- communication shaft 43b -- a slide -- 95d of slots inserted in movable was formed, and press section 43c is in contact with this edge.

[0100] By the above configurations, if the pickup unit 44 contacts the edge of communication shaft 43b as shown in drawing 46 , press section 42b will move rightward with lead shaft 42a, and the edge of the 1st chucking arm 95 will be pressed. Then, the slant surface part 95c rotates the 1st chucking arm 95 in

the direction adjacent to the taper side of chucking sleeve 94c. The energization force from engaged point 95b is transmitted to coincidence through engagement hole 96b, the 2nd chucking arm 96 resists the energization force of spring 94e, and it rotates in the direction in which the slant surface part 95c touches the taper side of chucking sleeve 94c. Therefore, since chucking sleeve 94c resists the energization force which is spring 94d, moves caudad and energizes the lower limit of suppressed area 94b as shown in drawing 44 , the disk hook 94 rotates and claw part 94a separates from disk inner circumference.

[0101] [5. Shutter unit] drawing 47 and drawing 48 are the front views showing the condition of the shutter unit 50 in the case of being in the case where a shutter lock out location has the Open door link 6, and a shutter open position, respectively.

[0102] first, it is shown in drawing 47 -- as -- the door plate 53 -- front panel 50a of the shutter unit 50 -- receiving -- guide slot 53a -- up and down -- a slide -- it is prepared movable. the door link 54 which connects the Open door link 6 and the door plate 53 with the location which laps with the door plate 53 of the lower part of the disk insertion opening 51 -- guide slot 54a -- right and left -- a slide -- it is prepared movable. Slanting rise-and-fall slot 54b of a left riser is formed in right and left of this door link 54, and two pin 53b prepared in right and left of the door plate 53 is inserted in this rise-and-fall slot 54b. Furthermore, the door link 54 is energized by spring 54d on left-hand side while engaged portion 54c which engages with press section 6c of the Open door link 6 is prepared.

[0103] By the above configuration, according to the rotation location of the Open door link 6, you make it go up and down the door plate 53 through the door link 54, and a shutter 52 is opened and closed. Namely, since press section 6c is separated from engaged portion 54c of the door link 54 as shown in drawing 47 when a shutter lock out location has the Open door link 6 as shown in drawing 2 , according to the energization force of spring 53a, it is in left-hand side, and the door plate 53 is held caudad and, as for the door link 54, a shutter 52 blockades the disk insertion opening 51. Moreover, since engaged portion 54c of the door link 54 be press by press section 6c of the Open door link 6 by the method of the right as show in drawing 48 when a shutter open position have the Open door link 6 as show in drawing 49 , the energization force in which the door link 54 be spring 54d be resist, it move to left-hand side, the door plate 53 be hold in an upper open position, and a shutter 52 open the disk insertion opening 51.

[0104] [6. Damper unit]

(1) The mechanism which consists of the ROWA chassis unit 10, the upper chassis unit 20, a stage unit 30, and a drive base unit 40 is supported by floating to a car through four dampers 63 of the damper unit 60, and four damper springs 64 in order to decrease the extraneous vibration at the time of disk playback, as the mechanism carried out vibrationproofing device ****.

[0105] (2) In order to make in agreement the location of the disk insertion opening 51 by the side of the shutter unit 50, and the disk path by the side of the stage unit 30 of a mechanism at the time of immobilization / discharge of a vibrationproofing device, and disk loading/ejection, fix a vibrationproofing device and a mechanism is fixed to the damper unit 60. Therefore, a vibrationproofing device will be canceled at the time of the disk playback which continues at the time of disk loading, and a mechanism will be made into floating. Such immobilization/discharge of a vibrationproofing device are concretely explained with reference to drawing 50 -54.

[0106] Here, drawing 50 is the top view showing the shift to the discharge condition of a vibrationproofing device from a fixed condition. Moreover, drawing 51 -54 are the front view and side elevation corresponding to the fixed position and discharge location of a vibrationproofing device. First, as shown in the slide plates 13 and 14 of a pair shown in drawing 4 and drawing 5 at drawing 50 , the lock links 18 and 19 for immobilization/discharge of a vibrationproofing device are connected, and it is constituted so that the actuation from the initial valve position of slide plates 13 and 14 may cancel a vibrationproofing device. That is, in the slide plates 13 and 14 of a pair, it has the horizontal level crooked inside in accordance with the angle of the ROWA chassis unit 10, and grooved cams 13b and 14b are formed in this horizontal level, respectively. On the other hand, the lock links 18 and 19 are formed rotatable centering on Shafts 18a and 19a to the ROWA chassis unit 10, and the pins 18b and 19b inserted in the grooved cams 13b and 14b of slide plates 13 and 14 are formed in each.

[0107] Moreover, the engagement sections 13c, 14c, 18c, and 19c which engage with the damper unit 60 are formed in slide plates 13 and 14 and the lock links 18 and 19, respectively. And as shown in drawing 50 and drawing 53 (A), the lock sections 61a and 61b which engage with engagement section 13c of the slide plate 13 of the same side and engagement section 18c of the lock link 18, respectively, and lock this are formed in one damper plate 61. Moreover, as shown in drawing 50 and drawing 53 (B), the lock sections 62a and 62b which engage with engagement section 14c of the slide plate 14 of the same side and engagement section 19c of the lock link 19, respectively, and lock this also on the damper plate 62 of another side are formed.
[0108] Moreover, as mentioned above, the lock links 18 and 19 of a pair are rotated with migration of slide plates 13 and 14 with the engagement relation of the Pins 18b and 19b and grooved cams 13b and 14b of slide plates 13 and 14. More, as shown in a detail at drawing 4 and drawing 5 , the bottom of the stairway cams 13a and 14a of slide plates 13 and 14 is longer than other stages, and actuation of the lock links 18 and 19 by grooved cams 13b and 14b is performed within the limits of the migration stroke corresponding to this bottom. Therefore, when slide plates 13 and 14 move from the initial valve position shown in drawing 2 and pin 30b of the stage unit 30 arrives at the endmost part of the bottom of the stairway cams 13a and 14a, the lock links 18 and 19 arrive at a discharge location.
[0109] By the above configurations, when the slide plates 13 and 14 of a pair are in an initial valve position and a fixed position has the lock links 18 and 19 Engagement section 13c of a slide plate 13 and engagement section 18c of the lock link 18 engage with the sense which extends the lock sections 61a and 61b to which the damper plate 61 corresponds at drawing 50 , drawing 51 , and drawing 53 , respectively so that it may be shown. Engagement section 14c of a slide plate 14 and engagement section 19c of the lock link 19 engage with the sense which puts the lock sections 62a and 62b to which the damper plate 62 corresponds, respectively.
[0110] Thus, a lock of a vibrationproofing device fixes a mechanism to the position to the shutter unit 50 and the damper unit 60, i.e., the location whose location of the disk insertion opening 51 of the shutter unit 50 and the disk path of the stage unit 30 of a mechanism corresponds, as shown in drawing 7 .
[0111] On the other hand, when slide plates 13 and 14 move, a discharge location is arrived at and the lock links 18 and 19 arrive at a discharge location, the lock of a vibrationproofing device is canceled and a vibrationproofing device is made to act, when the engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 separate from the damper unit 60 as shown in drawing 50 , drawing 52 , and drawing 54 . Thus, discharge of the lock of a vibrationproofing device supports a mechanism by floating through a damper 63 and the damper spring 64 to a car.
[0112] [-- 7. -- configuration] of a detection device -- actuation of each configuration member in the above disk units is performed by controlling actuation of the 1st motor 1, the 2nd motor 11, the 3rd motor 31, and the 4th motor 41 by the control circuit which is not illustrated. And control by these control circuits is performed based on the detection device by the switch and sensor which have been arranged at each part in equipment. The configuration of such a detection device is explained below.
[0113] (1) As shown in mode plate location detection device **** and drawing 2 , the photosensor PH 1 for detecting the location of the mode plate 3 optically is formed in chassis 10a using two or more slit 3h of the mode plate 3. Moreover, pin 72b which engages with cam 3d prepared in the mode plate 3 is prepared in the switch plate 72, and an active position changes to it by the case where the mode plate 3 is in an initial valve position, and the case of being other. And press section 72c is prepared in the edge of the switch plate 72, and when the switch plate 72 is in an initial valve position, the 1st switch SW1 pressed by press section 72c is formed in chassis 10a.
[0114] (2) 6d of press sections is prepared, and when a shutter open position has the Open door link 6, the switch SW2 pressed by 6d of press sections is formed in the edge of the Open door link 6 near the shutter appearance device switch plate 72 at chassis 10a. Moreover, as shown in drawing 47 and drawing 48 , when the shutter 52 blockades the disk insertion opening 51, the switch SW3 pressed by the edge of the door plate 53 is formed in front panel 50a of the shutter unit 50.
[0115] (3) As shown in disk holder detection device drawing 39 , the photosensor PH 2 for detecting the

location of the disk holder 21 optically is formed in the upper limb of the right lateral of the stage unit 30 using two or more slit 5g of the side selection plate 5 shown in drawing 25 . Moreover, it is pressed by the front end of the side selection plate 5, and the switch SW4 which detects that the side selection plate 5 is in a front initial valve position is formed in the right medial surface of the stage unit 30.
[0116] (4) As shown in drive base detection device one side and drawing 55 , while the switch plate 39 pressed by the front end of drive base 40a is formed in the anterior part of the left medial surface of the stage unit 30 rotatable, the switch SW5 which detects that drive base 40a is in a front initial valve position is formed in the near. Press section 39a which presses a switch SW5 by the rotation is prepared in the edge of the switch plate 39. And the switch plate 39 is energized with the spring which is not illustrated in the direction in which press section 39a separates from a switch SW5.
[0117] Moreover, the photosensor PH 3 detected optically is formed [that drive base 40a is in a playback location, and] near the center of an upper limb of the left medial surface of the stage unit 30. Furthermore, it is pressed by the back end of drive base 40a, and the switch SW6 which detects that drive base 40a is in a disk chucking location is formed in the posterior part of the left medial surface of the stage unit 30.
[0118] (5) As shown in a disk detection device pan at drawing 26 , on both sides of the loading roller 33, two places and a total of four photosensors 4-PHs 7 are arranged by the disk passage section of the stage unit 30, and it connects with the entrance side in it at the two-place and back side at the control circuit of a mechanism. Such photosensors 4-PHs 7 consist of the emitter parts and light sensing portions of a vertical pair which have been arranged as sandwiched the up-and-down disk guides 37 and 38, as shown in drawing 28 .
[0119] Among these, two photosensors 4 and PHs 5 of an entrance side are formed in order to detect disk loading initiation, slightly more widely than the path of 8cm disk, are arranged at spacing narrower than the path of 12cm disk, and have come be made by discernment of the path of a disk in the latest location of the inlet port distant from the loading roller 33. On the other hand, two photosensors 6 and PHs 7 by the side of the back are arranged at narrower spacing, and detect the disk loading completion with the loading roller 33, and the completion of disk ejection. Below, the detection actuation by such photosensors 4-PHs 7 is explained with reference to drawing 56 and drawing 57 .
[0120] Here, the explanatory view in which the explanatory view in which drawing 56 (A) shows disk loading initiation detection, and drawing 56 (B) show disk loading completion detection, and drawing 56 (C) are the explanatory views showing the completion detection of disk ejection. Moreover, the explanatory view and drawing 57 (C) which show detection when the explanatory view and drawing 57 (B) which show detection when drawing 57 (A) inserts the 8cm disk Ds from the center of disk insertion opening insert the 8cm disk Ds from the left end section of disk insertion opening are the explanatory view showing the detection at the time of inserting the 8cm disk Ds from the right end section of disk insertion opening.
[0121] First, in the initial state at the time of disk insertion standby, as shown in drawing 56 (A), only when [although four sensing elements 81-84 have each in the condition of not detecting, among these] two photosensors 4 and PHs 5 of an entrance side change to a detection condition at two-piece coincidence, "insertion of the 12cm disk D" is detected. That is, based on such an operating condition of photosensors 4-PHs 7, distinguish the control circuit of a mechanism from the thing in "the condition that the 12cm disk D was inserted in the disk loading initiation detection location (drawing 26)", it makes rotation of the loading roller 33 start, and starts disk loading.
[0122] And two photosensors 6 and PHs 7 by the side of the back change in the middle of the continuing disk loading by migration of Disk D at two-piece coincidence at a detection condition. Then, as shown in drawing 56 (B), two photosensors 4 and PHs 5 of an entrance side change to the condition of not detecting, again with passage of Disk D, and when two photosensors 6 and PHs 7 by the side of the back change to the condition of not detecting, again, "disk loading completion with a loading roller" is detected further.
[0123] That is, the control circuit of a mechanism is distinguished from the thing in "the condition that the 12cm disk D reached to the disk loading completion detection location" based on such an operating

condition of photosensors 4-PHs 7, and suspends rotation of the loading roller 33. Furthermore, Disk D is the disk maintenance location D0 which it is further pushed into a back side by the stock arm 36 (drawing 27) at the same time it separates from the loading roller 33 in a disk loading completion detection location, and is finally shown according to a two-dot chain line in drawing 56 (B). It reaches and is held here.

[0124] Thus, when Disk D is in a disk maintenance location, four photosensors 4-PHs 7 have each in the condition of not detecting. If a disk ejection command is received from this condition, the control circuit of a mechanism will make the rotation to the hard flow of the loading roller 33 start, and will start disk ejection while extruding Disk D from a disk maintenance location by the ejection arm 7, as shown in drawing 58 . In this case, as shown in drawing 56 (C), when Disk D is extruded, two photosensors 6 and PHs 7 by the side of the back change to a detection condition, and two photosensors 4 and PHs 5 of an entrance side change to a detection condition with migration of a disk. Then, when two photosensors 6 and PHs 7 by the side of the back change to the condition of not detecting, again with passage of Disk D, "the completion of disk ejection" is detected.

[0125] That is, the control circuit of a mechanism is distinguished from the thing in "the condition that 12cm disk reached to the completion detection location of disk ejection" based on such an operating condition of photosensors 4-PHs 7, and suspends rotation of the loading roller 33.

[0126] On the other hand, two photosensors 4 and PHs 5 of ** entrance side have maintained the condition of not detecting, at the time of disk insertion standby. The case where at least one side of two photosensors 6 and PHs 7 by the side of the back changes to a detection condition, ** When only one side of two photosensors 4 and PHs 5 of an entrance side changed and follows a detection condition and at least one side of two photosensors 6 and PHs 7 by the side of the back changes to a detection condition, "insertion of foreign matters other than 12cm disk" is detected.

[0127] Namely, the control circuit of a mechanism is based on such an operating condition of photosensors 4-PHs 7. "The condition in which foreign matters, such as the 8cm disk Ds, passed through between two photosensors 4 and PHs 5 of an entrance side (drawing 57 (A))", Or "the condition (drawing 57 (B) or drawing 57 (C)) that foreign matters, such as the 8cm disk Ds, passed either of the photosensors 4 and PHs 5 of one side of an entrance side" is detected, in this case, inverse rotation of the loading roller 33 is carried out, and it is discharged to it.

[0128] Thus, in the stage unit 30, by using four photosensors 4 and PHs 5, the 12cm disk D is identified certainly, and is inserted, and malfunction is prevented by eliminating the other foreign matter including the 8cm disk D. In addition, since it will become the same path as the 12cm disk D even if it is the 8cm disk Ds if the adapter 97 for 8cm disks is used as shown in above-mentioned drawing 9 , the same detection and playback as the 12cm disk D are attained.

[0129] (6) a pickup detection device <A HREF="/Tokujitu/tjitemdrw.ipdl? N0000=237&N0500=1E_N/;>=>6:> -- < --;///&N0001=850&N0552=9&N 0553= 000043 -- " -- As shown in TARGET="tjitemdrw"> drawing 40, near the leading screw 43 in drive base 40a It is pressed by a part of screw holder 91, and the switch SW7 which detects that the pickup unit 44 is in a turntable 45 side rather than an initial valve position is formed. Furthermore, as shown in drawing 59 and drawing 60 , the switch SW8 which detects that the release location of disk chucking has the disk hook 94 is built in the side face by the side of the turntable 45 in the pickup unit 44 by contacting the supporter material of leading-screw 43 grade.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

OPERATION

[-- D. -- operation] -- below, sequential explanation is given as actuation of the disk regenerative apparatus of a gestalt of this operation which was mentioned above about a series of actuation from receipt of a disk to disk playback, the return actuation after disk playback, and disk discharge actuation. In addition, housekeeping operation until drawing 61 contains a disk and considers as a playback standby condition, It is the flow chart which shows the outline of a series of actuation including disk selection / playback actuation from a disk playback standby condition to disk playback. Drawing 62 It is the flow chart which shows the outline of return actuation until it contains this disk to a disk holder after playing a disk, and it returns to a disk playback standby condition in preparation for the actuation for the next disk playback. In case drawing 63 is in a disk playback standby condition, it is a flow chart which shows the outline of disk discharge actuation when a disk ejection command is emitted.
[0131] [-- 1. --] of operation to disk playback -- the outline of the flow of actuation to disk playback is explained first, referring to drawing 61 . That is, in step 101, according to the location of empty disk holder #n which is going to insert a disk, the disk holder 21 is positioned in a disk loading possible location, and in continuing step 102, a shutter 52 is opened wide and it prepares for insertion of a disk (disk insertion standby condition). And in this condition, if a disk is inserted from the disk insertion opening 51, in the following step 103, that inserted disk will be drawn and will be contained in disk holder #n with the stock arm 36 in continuing step 104 with the loading roller 33. Here, when inserting two or more disks, steps 101-104 will be repeated according to the number of disks. Thus, after disk containing to a disk holder, the lock of the vibrationproofing device of a mechanism is canceled, and it prepares for playback of a disk by making a mechanism into floating (disk playback standby condition).
[0132] Based on a playback command, a selection command, etc. of a disk, disk selection / playback actuation of steps 106-112 is performed following the above housekeeping operation. That is, you progress to step 106, you make it go up and down the stage unit 30 first, and the side selection plates 4 and 5 are positioned in the separation location of the disk holder 21 according to the disk which it is going to play. Next, in step 107, the disk holder 21 above a separation location is gone up, and space is formed. Then, in step 108, the drive base unit 40 is inserted into said space by separation of the disk holder 21, and chucking of the disk is carried out on the turntable unit 45 in continuing step 109 with the combination of descent of actuation of the DIKUSU hook 94 and the some of the disk holder 21.
[0133] Furthermore, in step 110, after going up the disk holder 21 a little, a disk is pulled out from the inside of the disk holder 21 by moving the drive base unit 40 to the front a little. Finally, after going up the disk holder 21 in step 111, a disk is played in step 112. Below, actuation of each steps 101-112 is explained according to an individual. In addition, about this detection actuation, it omits and detection of the rotation location of the mode plate 3 is explained, although carried out press of the switch SW1 by press section 72c of the switch plate 72, and by detecting slit 3h with photosensor PH 1.
[0134] [Step 101: Disk holder positioning] First, as shown in drawing 2 , the mode plate 3 is an initial valve position P0. When it is, as shown in drawing 7 , between the upper disk guide 37 and the ROWA disk guides 38 is positioned so that it may come to the location corresponding to the disk insertion opening 51.

[0135] Then, by the 2nd motor 11, the disk holder 21 is moved up and down through the disk holder elevator style 12, and the disk holder 21 of a desired stage is positioned in a disk loading possible location. That is, the location of the n-th step of empty disk holder #n which is going to insert a disk moves the disk holder 21 up and down to the location which is in agreement with the disk insertion opening 51 of the shutter unit 50, and holds in this location.
[0136] A motion of the side selection plate 5 which shows this actuation to drawing 64 - drawing 66 explains more concretely. In addition, since an operation of cam-groove 4for division b in the side selection plate 4 of the opposite side and 4d of horizontal levels for evacuation is the same as that of the side selection plate 5, illustration is omitted. That is, in carrying out disk loading to disk holder #6, the side selection plates 4 and 5 are moved to back (method of drawing Nakamigi) from the initial state of drawing 64 , and it makes it projection 21a of disk holder #1 of the bottom come to the bottom of the cam grooves 4b and 5b for division, as shown in drawing 65 .
[0137] Moreover, in carrying out disk loading to disk holder #1, the side selection plates 4 and 5 are moved further back, and it makes it projection 21a of disk holder #1 come to the horizontal levels 4d and 5d for evacuation of the maximum upper case of the cam grooves 4b and 5b for division, as shown in drawing 66 . Thus, by moving the disk holder 21, disk holder #1-#6 of a desired stage are positioned by the height (* in drawing shows) corresponding to the disk insertion opening 51. In addition, the above location detection of the side selection plates 4 and 5 is performed by detecting two or more slit 5g formed in the side selection plate 5 with photosensor PH 2.
[0138] In addition, since the top cams 24c and 25c are formed above the cam grooves 4b and 5b for division on both sides of projection 21e of the disk holder 21 which moves up, at the time of rise and fall of the disk holder 21, projection 21a of disk holder #6 of the maximum upper case is guided to top cam 24c. Therefore, it is stabilized and becomes smooth from the case where rise and fall of disk holder #6 are performed by only the cam grooves 4b and 5b for division.
[0139] [Step 102: Shutter disconnection] Following positioning of the above disk holders 21, by the 1st motor 1, the mode plate 3 is rotated clockwise and it considers as the shutter open position Pa 2 (drawing 49). Then, the Open door link 6 rotates to a shutter open position, and opens the shutter 52 of the shutter unit 50 fixed to the car side (drawing 48). At this time, since 6d of press sections of the Open door link 6 releases a switch SW2, the disk insertion standby condition of a mechanism is detected.
[0140] [Step 103: disk loading] -- if a disk is inserted from the disk insertion opening 51 in the state of the above disk insertion standby, two photosensors 4 and PHs 5 of an entrance side will change to a detection condition, and insertion of 12cm disk will detect -- having (drawing 56 (A)) -- by the 3rd motor 31, the loading roller 33 is rotated and Disk D is drawn. By such initiation of drawing in, if the end of Disk D moves in the inner part of a mechanism over the loading roller 33, two photosensors 6 and PHs 7 by the side of the back will change to a detection condition (drawing 56 (B)).
[0141] [Step 104: Disk receipt] If Disk D separates from the loading roller 33 by rotation of the above loading rollers 33 across the disk loading completion detection location shown in drawing 56 (B), two photosensors 6 and PHs 7 by the side of the back will change to the condition of not detecting, and the disk loading completion with the loading roller 33 will be detected. If it rotates to the counterclockwise rotation in drawing and the mode plate 3 in the shutter open position Pa 2 is moved to the disk pushing location Pa 1 (drawing 27) by the 1st motor 1 according to this detection, the drive plate 35 will move ahead through the stage power link 9. Then, the stock arm 36 rotates through the drive plate 35 and press plate 35e, and it is a stowed position D0. Disk D is pushed in.
[0142] More, in a detail, if the mode plate 3 moves to the disk pushing location Pa 1 as shown in drawing 27 , it will move to a rotation location and the stage power link 9 will press the suppressed area of the drive plate 35 by the press section 9c. Then, since it moves to a pushing location since press plate 35e also moves with migration of the drive plate 35, as the stock arm 36 pressed by press plate 35e rotated and shown in drawing 27 , the press section 36b is the disk maintenance location D0 about Disk D. It pushes in. Consequently, Disk D is contained in the disk holder 21, and is held by disk hold spring 21b.

[0143] In addition, since idler plate 32f pin 32g will come to the posterior part of grooved cam 35c of the drive plate 35 as shown in drawing 30 if the drive plate 35 moves in this way, idler gear 32b separates from gear train 32c by the side of a guide shaft, and the drive base unit 40 does not move.
[0144] [Step 105: lock discharge of a vibrationproofing device] -- by the above steps 101-104 Or after completing receipt of the disk of all (one sheet or two or more sheets) into the disk holder 21 by the repeat, the mode plate 3 -- the 1st motor 1 -- the counterclockwise rotation in drawing -- rotating -- initial valve position P0 from -- by making it move to the floating lock discharge location Pb1 Slide plates 13 and 14 are ahead moved through the link sections 13d and 14d, and the lock of a vibrationproofing device is canceled.
[0145] That is, as shown in drawing 50 , drawing 51 and drawing 53 (A), and (B), the engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 are engaging with the lock sections 61a, 61b, 62a, and 62b to which the damper plates 61 and 62 correspond, respectively at the time of disk loading, and the vibrationproofing device is locked.
[0146] From such a condition, as shown in drawing 50 , the mode plate 3 rotates. When the pins 18b and 19b of the discharge location 18 and 19, i.e., lock links, reach the bay of grooved cam 3b of the mode plate 3, slide plates 13 and 14 As shown in drawing 52 and drawing 54 (A), and (B), the lock links 18 and 19 are also rotated in a discharge location. The engagement sections 13c and 14c of slide plates 13 and 14 and the engagement sections 18c and 19c of the lock links 18 and 19 separate from the damper unit 60, and the lock of a vibrationproofing device is canceled. Consequently, to a car, a mechanism is supported by floating through a damper 63 and the damper spring 64, and will be in a disk playback standby condition.
[0147] [Step 106: Disk holder separation location selection] In the above disk playback standby conditions, positioning of the stage unit 30 according to the disk which it is going to play is performed. In addition, the target disk is automatically determined in manual here based on a playback command, a selection command, etc. of a disk according to the playback program set up beforehand.
[0148] That is, as shown in drawing 6 , by rotating the 1st motor 1 and making the counterclockwise rotation in drawing rotate the mode plate 3 further, you move slide plates 13 and 14, you make it go up and down the stage unit 30, and it positions in the disk playback location according to the disk which it is going to play, i.e., the disk playback location according to the n-th step of disk holder #n holding the disk.
[0149] for example, when aimed at the 3rd step of disk holder #3 from the bottom As the mode plate 3 is rotated, slide plates 13 and 14 are moved through the pins 13e and 14e of grooved cam 3b straight-line on the staff and it is shown in drawing 67 You make it go up and down the stage unit 30 so that the acute sections 4f and 5f of the side selection plates 4 and 5 may come to the location corresponding to between the 3rd step of disk holder #3, and the 2nd step of disk holder #2.
[0150] Thus, when selection of the disk holder by rise and fall of the stage unit 30 is performed, as shown in drawing 26 , the stage power link 9 is moved to a position in readiness by cam-groove 3e of the mode plate 3. Then, since press section 9c of the stage power link 9 cancels the press to the drive plate 35, the drive plate 35 moves back according to the spring 35d energization force. And since the stock arm 36 is canceled of the press by press plate 35e, it rotates according to the energization force of torsion spring 36c, and it returns to an initial valve position.
[0151] In addition, at this time, as shown in drawing 29 , since it comes to the anterior part of grooved cam 35c of the drive plate 35, idler gear 32b engages with gear train 32c by the side of a guide shaft idler plate 32f pin 32g. Then, since stage gear 30c connects with the loading roller 33, stage gear 30c will be in a rotatable condition by the 3rd motor 31.
[0152] [Step 107: Disk holder separation] Following selection of the above separation locations, by rotating the 2nd motor 11, the upper selection plates 24 and 25 are moved horizontally, and the side selection plates 4 and 5 are moved in connection with this. Location detection of these side selection plates 4 and 5 is performed by detecting two or more slit 5g formed in the side selection plate 5 with photosensor PH 2.
[0153] Thus, in the example which chooses above disk holder #3, if the side selection plates 4 and 5 are

moved, as shown in drawing 68 , projection 21a of disk holder #3-#6 located above 5f of acute sections will be pushed up up by cam-groove 5b for division. On the other hand, projection 21a of disk holder #1-#2 located below the acute sections 4f and 5f is caudad depressed by the top ramps 4e and 5e.
[0154] Then, since disk holder #3-#6 go up in one and disk holder #1-#2 move under the side selection plates 4 and 5, the disk holder 21 is divided. Therefore, the space for drive base unit insertion of selected disk holder #3 is formed caudad.
[0155] On both sides of projection 21e of the disk holder 21 which moves up, the top cams 24c and 25c are formed above the cam grooves 4b and 5b for division. In addition, under the top ramps 4e and 5e Since the bottom ramps 24d and 25d are formed on both sides of projection 21e of the disk holder 21 which moves caudad, at the time of separation of the disk holder 21 Projection 21a of disk holder #6 of the maximum upper case is guided to top cam 24c, and projection 21a of disk holder #1 of the bottom is guided to the bottom ramps 24d and 25d.
[0156] The drive base unit 40 is inserted in the formed space as a result of [Step 108: Drive base unit insertion], then the above disk holder separation. Namely, at the time of disk holder separation, as mentioned above, the stage gears 30c and 30d connect with the loading roller 33, and 30d is in stage gear 30c and a rotatable condition by the 3rd motor 31. For this reason, by rotating the 3rd motor 31, as shown in drawing 33 -37, the stage gears 30c and 30d rotate, and drive base 40a carries out horizontal migration through the rack plate 47. By this horizontal migration, drive base 40a separates from the switch plate 39 shown in drawing 55 , according to the energization force of a spring, the switch plate 39 rotates and that press section 39a solves the press to a switch SW5.
[0157] And if drive base 40a moves to a location as shown according to the two-dot chain line in drawing from an initial valve position as shown as a continuous line in drawing 33 , since the edge of drive base 40a will press a switch SW6, it is detected that drive base 40a came to the chucking location. At this time, drive base 40a is positioned by engagement to the position spring 48 and notch 86a of the position plate 86 in a chucking location. Consequently, the drive base unit 40 is inserted into said space formed of disk holder separation, and is held in the location which laps with the disk with which the turntable unit 45 was held at the disk holder 21.
[0158] [Step 109: Disk chucking] After inserting the drive base unit 40 into said space as mentioned above, as shown in drawing 40 , by rotating the 4th motor 41, a leading screw 43 is rotated through the gear device 42, and the load discharge device of the disk hook 94 is operated using migration of the pickup unit 44.
[0159] That is, in an initial state, as shown in drawing 59 , although the pickup unit 44 is in the initial valve position to which the screw holder 91 is pressing the switch SW7, it is not in contact with communication shaft 43b of a load discharge device. For this reason, as shown in drawing 43 and drawing 45 , the 1st and 2nd chucking arms 95 and 96 are distant from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d with the energization force of spring 96e. Therefore, it is up according to the energization force of spring 94e chucking sleeve 94d, and the disk hook 94 energized by chucking sleeve 94d has the claw part 94a in a disk maintenance location.
[0160] If the 4th motor 41 is rotated and the pickup unit 44 is further moved to the turntable unit 45 side from this condition, as shown in drawing 60 , the switch SW8 of the pickup unit 44 will be pressed by the supporter material of a leading screw 43, and the edge of the pickup unit 44 will press communication shaft 43b. Then, as shown in drawing 44 and drawing 46 , by press section 42of communication shaft 43b b, the edge of the 1st chucking arm 95 is pressed, and the 1st chucking arm 95 and the 2nd chucking arm 96 resist the energization force of spring 96e, it rotates, and slant surface parts 95c and 96c contact a chucking sleeve 94d taper side. Therefore, since chucking sleeve 94d resists the energization force of spring 94e, moves caudad and energizes suppressed area 94b, the disk hook 94 rotates, and since claw part 94a moves to a disk release location, it will be in the condition that a disk can be positioned on the turntable unit 45.
[0161] To load discharge of the above disk hooks, then, by rotating the 2nd motor 11 Back is made to carry out slide migration of the side selection plates 4 and 5, as shown in drawing 69 . Projection 21a of disk holder #3 is moved into cam-groove 4for chucking c, and 5c from the horizontal levels 4d and 5d

for evacuation. Only disk holder #3 are dropped, and Disk D is positioned on the turntable unit 45 so that claw part 94a of the disk hook 94 may go into the bore of the disk D held at this. In this case, since it is extended to the lower part a little rather than the location used as the height corresponding to the turntable unit 45, using the elasticity of selected disk holder #3, a disk is pushed on the turntable unit 45 and the lower limit of the cam grooves 4c and 5c for disk chucking is positioned certainly.
[0162] Following positioning of the above disks, as the 4th motor 41 is rotated further and it is shown in drawing 59 , the pickup unit 44 is moved to an initial valve position, and it separates from communication shaft 43b. Then, as shown in drawing 43 and drawing 45 , it rotates according to the energization force of spring 96e, and the 1st and 2nd chucking arms 95 and 96 separate from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d. Therefore, chucking sleeve 94d, it moves up according to the energization force of spring 94e, and the disk hook 94 energized by chucking sleeve 94d rotates, and the claw part 94a moves to a disk maintenance location. Consequently, claw part 94a of the disk hook 94 engages with the bore of Disk D, and holds Disk D certainly on the turntable unit 45.
[0163] [Step 110: Disk drawer] By rotating the 3rd motor 31 and rotating the stage gears 30c and 30d following the above disk chucking, as shown in drawing 34 , from a chucking location, it is made to move to an initial-valve-position side a little, and the drive base unit 40 is positioned in a play location. This play location is detected by the photosensor PH 3 shown in drawing 39 . Moreover, in a play location, the position spring 48 of the drive base unit 40 engages with notch 86a of the center of the position plate 86.
[0164] The disk D by which chucking was carried out is pulled out from disk holder #3 against the energization force of disk hold spring 21b by the horizontal migration of such a drive base unit 40 on the turntable unit 45.
[0165] [Step 111: Disk holder rise] In the above disk chucking and a disk drawer, then, by rotating the 2nd motor 11 As the slide migration of the side selection plates 4 and 5 is made to carry out ahead and it is shown in drawing 70 and drawing 71 Projection 21a of disk holder #3 is returned to the horizontal levels 4d and 5d for evacuation from the cam grooves 4c and 5c for chucking, and it is made to go up to an upper part location again so that disk holder #3 may not become reproductive trouble.
[0166] [Step 112: Disk playback] The usual disk playback is performed after a series of above actuation. That is, while rotating the turntable unit 45 with a spindle motor 46, Disk D is played by carrying out horizontal migration of the pickup unit 44 by the 4th motor 41.
[0167] [2. The outline of the flow of return actuation] after disk playback, next the return actuation after disk playback is explained referring to the flow chart of drawing 62 . First, in step 201, the disk holder 21 in a rise location is dropped. Next, in step 202, the disk on the turntable unit 45 is contained in the disk holder 21 by moving the drive base unit 40 back. Then, in step 203, the load of the disk hook 94 is canceled and a disk is removed from the turntable unit 45 by raising the disk holder 21. Then, in step 204, the drive base unit 40 is returned to an initial valve position, and in continuing step 205, the disk holder 21 is dropped and it returns to an initial valve position.
[0168] And the following disk is reproducible by performing a series of disk selection / playback actuation (steps 106-112) which mentioned above another disk contained in the mechanism after disk playback following return actuation of the above steps 201-205 when reproducing continuously. Below, actuation of each steps 201-205 is explained according to an individual. In addition, in the following explanation, the example which holds the disk D after playback in disk holder #3 as well as an above-mentioned example is used.
[0169] [Step 201: Disk holder descent] Slide migration of the side selection plates 4 and 5 is carried out, and a disk holder is put into the cam grooves 4c and 5c for chucking from the horizontal levels 4d and 5d for evacuation, and it is made to descend to the height corresponding to the played disk D by rotating the 2nd motor 11, first, as shown in drawing 70 and drawing 69 . That is, disk holder #3 which re-hold the disk D drop disk holder #3 to the location used as the height corresponding to the disk D held on the turntable unit 45.
[0170] It is the selection playback location Pb of disk holder #3 which held the played disk as the mode

plate 3 was shown at drawing 26 at the time of [disk Step 202: Receipt] disk playback termination. Since it is, a position in readiness has the stage power link 9. For this reason, as shown in drawing 29 , it is in the front end of grooved cam 35c of the drive plate 9 idler plate 32f pin 32g, and the gear device 32 for a level drive has connected the 3rd motor 31 with the stage gears 30c and 30d.

[0171] Therefore, a chucking location is made to carry out horizontal migration of the drive base unit 40 in a disk playback location again by rotating the 3rd motor 31, following descent of the above disk holders, as shown in drawing 33 . The disk held on the turntable unit 45 is inserted into disk holder #3 corresponding by the horizontal migration of such a drive base unit 40. In this case, Disk D overcomes disk hold spring 21b of both sides, arrives at the disk maintenance location in the disk holder 21, and is held by disk hold spring 21b in that location.

[0172] [Step 203: Disk removal] As mentioned above, after containing Disk D in a disk holder, as shown in drawing 40 , by rotating the 4th motor 41, a leading screw 43 is rotated through the gear device 42, and the load discharge device of a disk hook is operated using migration of the pickup unit 44.

[0173] That is, by making it move to a chucking discharge location as shows the pickup unit 44 to drawing 60 from an initial valve position as shown in drawing 59 by rotation of the 4th motor 41 like the time of disk chucking mentioned above, communication shaft 43b is pressed and the edge of the 1st chucking arm 95 is pressed by the press section 43c. Then, as shown in drawing 44 and drawing 46 , the 1st chucking arm 95 and the 2nd chucking arm 96 resist the energization force of spring 96e, and rotate, and slant surface parts 95c and 96d contact a chucking sleeve 94d taper side. Therefore, since chucking sleeve 94d resists the energization force of spring 94e, moves caudad and energizes suppressed area 94b, the disk hook 94 rotates, and claw part 94a moves to a disk release location, and will be in a dismountable condition from on the turntable unit 45 about Disk D.

[0174] To load discharge of the above disk hooks 94, then, by rotating the 2nd motor 11 As slide migration of the side selection plates 4 and 5 is carried out and it is shown in drawing 68 Projection 21a of disk holder #3 is moved to the horizontal levels 4d and 5d for stocker evacuation from the cam grooves 4c and 5c for disk chucking, disk holder #3 are raised, and the disk D held at this is removed from the turntable unit 45.

[0175] As such a disk D removes, and it is alike, then the 4th motor 41 is rotated further and it is shown in drawing 59 , the pickup unit 44 is returned to an initial valve position, and the press to communication shaft 42a is solved. Then, as shown in drawing 43 and drawing 45 , the 1st and 2nd chucking arms 95 and 96 separate from the taper side whose slant surface parts 95c and 96d are chucking sleeve 94d according to the energization force of spring 96e. And chucking sleeve 94d moves up according to the spring 94e energization force, the disk hook 94 by which it was energized by chucking sleeve 94d rotates, and the claw part 94a returns to a disk maintenance location (it removes and a disk is already ending).

[0176] [Step 204: Drive base unit return] The drive base unit 40 in a chucking location is returned to an initial valve position as shown as a continuous line in drawing 33 by the above disks' removing, and being alike, then rotating the 3rd motor 31.

[0177] [Step 205: Disk holder return] Following the return of the above drive base units 40, by rotating the 2nd motor 11, slide migration of the side selection plates 4 and 5 is carried out, and projection 21a of disk holder #3 is moved to the cam grooves 4b and 5b for division. Then, as shown in drawing 67 , disk holder #3-#6 descend and they return to a lower part location. On the other hand, downward projection 21a of disk holder #1-#2 also passes along the top ramps 4e and 5e, and exceeds the acute sections 4f and 5f. Then, it rotates according to the energization force of torsion spring 22c in the direction which plate 22a of a pantograph 22 closes, and the disk holder 21 currently divided up and down coalesces again.

[0178] In addition, since projection 21a of disk holder #6 is caudad energized by top cam 24c and projection 21a of disk holder #1 is energized up by the bottom ramp 2 when closing the disk holder 21, compared with the case where the disk holder 21 closes only according to the spring load of torsion spring 22c of a pantograph 22, it can close by the bigger force. Moreover, even if the sliding friction at

the time of closing the disk holder 21 when the moment force of inclining to a before side by the self-weight of the disk holder 21 and a disk works increases, the disk holder 21 can be closed certainly.
[0179] [-- 3. -- disk discharge actuation] -- the outline of the flow of disk discharge actuation is explained further, referring to the flow chart of drawing 63 . First, in step 301, the vibrationproofing device of a mechanism is locked and a mechanism is changed into a fixed condition. In continuing step 302, the stage unit 30 is returned to an initial valve position. Next, in step 303, the disk holder 21 is positioned in the location which can be disk ejected according to the location of disk holder #n which is going to discharge a disk. Then, in step 304, while opening a shutter 52, with the ejection arm 7, a disk is extruded from the inside of disk holder #n, and the disk extruded from disk holder #n in continuing step 305 is discharged with the loading roller 33, and is moved from the disk insertion opening 51 to the location in which ejection is possible.
[0180] Moreover, when a disk ejection command is emitted at the time after disk playback, after performing return actuation after disk playback which was mentioned above (steps 201-205), disk discharge actuation of the succeedingly above steps 301-304 will be performed. Below, actuation of each steps 301-305 is explained according to an individual.
[0181] [Step 301: lock of a vibrationproofing device] -- when the side selection plates 4 and 5 are returned to an initial valve position and the disk holder D is closed as mentioned above, slide plates 13 and 14 are in a discharge location as shown in drawing 50 , drawing 52 , and drawing 54 , it is separated from the damper plates 61 and 62 with the lock links 18 and 19, the lock of a vibrationproofing device is canceled, and the mechanism is supported by floating to the car. From this condition, when the mode plate 3 is rotated clockwise and only the migration stroke corresponding to the bottom of those stairway cams 13a and 14a moves slide plates 13 and 14, slide plates 13 and 14 and the lock links 18 and 19 are made to engage with the damper plates 61 and 62, respectively, as shown in drawing 51 and drawing 53 , and a vibrationproofing device is locked. Consequently, a mechanism is fixed to the location the disk insertion opening 51 of the shutter unit 50 and whose disk path 39 of the stage unit 30 correspond.
[0182] [Step 302: Stage unit return] When a floating lock is made as mentioned above, slide plates 13 and 14 are initial valve positions P0. Returning, the stage unit 30 comes to the lowest location. Therefore, a mechanism returns to a disk playback standby condition which was mentioned above.
[0183] [Step 303: Disk holder positioning] Following the lock of the above vibrationproofing devices, by rotating the 2nd motor 11, the disk holder 21 is raised through the disk holder elevator style 22, and it positions in the location which can be disk ejected. For example, as shown in drawing 65 or drawing 66 , when the disk D which it is going to discharge is held in the 6th step of disk holder #6, or the 1st step of disk holder #1, the location of disk holder #6 or disk holder #1 raises the disk holder 21 to the location which is in agreement with the disk insertion opening 51 of the shutter unit 50, and holds in this location.
[0184] [Step 304: Shutter disconnection and disk extrusion] Following positioning of the above disk holders 21, by rotating the 1st motor 1 further and moving the mode plate 3 to the shutter open position Pa 1 (drawing 49) which is an endmost part location, the Open door link 6 is moved to a shutter open position, and the shutter 52 of the shutter unit 50 fixed to the car side is opened (drawing 48). The ejection arm 7 rotates in a disk ejection location from a disk release location, and extrudes the disk D in disk holder #n to coincidence, and the loading roller 33 is made stuck to it by pressure by migration to such a shutter open position Pa 1 of the mode plate 3, as shown in drawing 58 .
[0185] [Step 305: Disk ejection] If Disk D is extruded from the inside of disk holder #n as mentioned above, two photosensors 6 and 7 by the side of the back will change to a detection condition, and the 3rd motor 31 will start. Then, rotation of the loading roller 33 begins and a disk moves to an eject direction. Thus, if discharge of a disk begins, when actuation will progress further and some disks D will project from the disk path of a mechanism, two photosensors 4 and 5 of an entrance side also change to a detection condition. And as Disk D shows drawing 56 (C), when it reaches to the completion detection location of disk ejection and the most finally projects from the inlet port of a disk path, two photosensors 4 and 5 by the side of the back change to the condition of not detecting, and the completion of disk ejection with the loading roller 33 is detected. Disk D is held from the disk insertion opening 51 with

this loading roller 33 in the location in which ejection is possible by suspending the 3rd motor 31 and suspending the loading roller 33 at this time. Namely, a mechanism will be in a disk fetch standby condition.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the decomposition perspective view showing the outline of the whole disk regenerative apparatus concerning the gestalt of one operation by this invention.
[Drawing 2] The mode plate in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in an initial valve position.
[Drawing 3] It is the rear view of the ROWA chassis unit of drawing 1 .
[Drawing 4] It is the left lateral perspective drawing of the ROWA chassis unit of drawing 1 .
[Drawing 5] It is the right lateral perspective drawing of the ROWA chassis unit of drawing 1 .
[Drawing 6] The mode plate in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in a stage unit rise-and-fall location.
[Drawing 7] It is the front view of drawing 6 .
[Drawing 8] It is the top view showing the configuration of a disk holder.
[Drawing 9] It is the top view showing the condition of having inserted in the disk holder of drawing 8 8cm disk with which the adapter was equipped.
[Drawing 10] It is side-face drawing of longitudinal section showing the condition of having carried out the laminating of many disk holders of drawing 8 .
[Drawing 11] It is the enlarged drawing of the R section in drawing 10 .
[Drawing 12] It is the fluoroscopy side elevation (A) showing the condition before the disk insert/eject actuation initiation in the disk holder of drawing 8 , and (B) is the enlarged drawing of the S section.
[Drawing 13] It is the fluoroscopy side elevation (A) showing the condition at the time of the disk insert/eject actuation initiation in the disk holder of drawing 8 , and (B) is the enlarged drawing of the S section.
[Drawing 14] It is the fluoroscopy side elevation (A) showing the condition under disk insert/eject actuation in the disk holder of drawing 8 , and (B) is the enlarged drawing of the S section.
[Drawing 15] It is the enlarged vertical longitudinal sectional view showing the supporting section of the disk holder of drawing 8 .
[Drawing 16] It is the fluoroscopy side elevation showing the initial state of the disk holder of drawing 8 .
[Drawing 17] It is the fluoroscopy side elevation showing the condition of having gone up the whole disk holder of drawing 8 .
[Drawing 18] It is the fluoroscopy side elevation showing the condition of having gone up four steps on the disk holder of drawing 8 .
[Drawing 19] It is the fluoroscopy side elevation showing the condition of having gone up only the maximum upper case of the disk holder of drawing 8 .
[Drawing 20] It is the side elevation showing the condition that the pantograph of the disk holder of drawing 8 closed.
[Drawing 21] It is the side elevation showing the condition that the pantograph of the disk holder of drawing 8 opened.

[Drawing 22] It is the top view of the upper chassis unit of drawing 1 .
[Drawing 23] It is the rear view of the upper chassis unit of drawing 1 .
[Drawing 24] It is the left side view of the upper chassis unit of drawing 1 .
[Drawing 25] It is the right side view of the upper chassis unit of drawing 1 .
[Drawing 26] The stage power link in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in a position in readiness.
[Drawing 27] The stage power link in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in a rotation location.
[Drawing 28] It is the front view showing the sensor formed in the disk guide of drawing 1 .
[Drawing 29] It is the fluoroscopy left side view showing the time of idler gear connection of the gear device for a level drive in the stage unit of drawing 1 .
[Drawing 30] It is the fluoroscopy left side view showing the time of idler gear release of the gear device for a level drive in the stage unit of drawing 1 .
[Drawing 31] It is the fluoroscopy right side view showing the gear train by the side of the motor of the gear device for a level drive in the stage unit of drawing 1 .
[Drawing 32] It is the fluoroscopy left side view showing the supporter of the ROWA roller in the stage unit of drawing 1 .
[Drawing 33] The drive base in the stage unit of drawing 1 is the top view showing the condition of being in an initial valve position and a chucking location.
[Drawing 34] The drive base of drawing 33 is the top view showing the condition of being in a playback location.
[Drawing 35] The drive base of drawing 33 is the left side view showing the condition of being in an initial valve position.
[Drawing 36] The drive base of drawing 33 is the left side view showing the condition of being in a playback location.
[Drawing 37] The drive base of drawing 33 is the left side view showing the condition of being in a chucking location.
[Drawing 38] It is the front view of the drive base of drawing 33 .
[Drawing 39] It is the right side view of the stage unit of drawing 1 .
[Drawing 40] It is the top view showing the gear device for a pickup drive on the stage unit of drawing 33 .
[Drawing 41] It is the front view of drawing 40 .
[Drawing 42] It is the left lateral sectional view of drawing 40 .
[Drawing 43] It is important section drawing of longitudinal section showing the disk chucking condition of the turntable unit on the stage unit of drawing 33 .
[Drawing 44] It is important section drawing of longitudinal section showing the disk chucking discharge condition of the turntable unit on the stage unit of drawing 33 .
[Drawing 45] It is the top view showing the initial state or disk chucking condition of a turntable unit on the stage unit of drawing 33 .
[Drawing 46] It is the top view showing the disk chucking discharge condition of the turntable unit on the stage unit of drawing 33 .
[Drawing 47] It is the front view showing the disk insertion opening closing condition of the shutter unit of drawing 1 .
[Drawing 48] It is the front view showing the disk insertion opening disconnection condition of the shutter unit of drawing 1 .
[Drawing 49] The mode plate in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in a shutter open position.
[Drawing 50] The mode plate in the ROWA chassis unit of drawing 1 is the top view showing the condition of being in a floating lock discharge location.
[Drawing 51] The ROWA chassis unit of drawing 50 is the front view showing that it is in a floating lock condition.

[Drawing 52] The ROWA chassis unit of drawing 50 is the front view showing that it is in a floating lock discharge condition.
[Drawing 53] It is the left side view (A) and right side view (B) showing that the damper plate of drawing 50 is in a floating lock condition.
[Drawing 54] It is the left side view (A) and right side view (B) showing that the damper plate of drawing 50 is in a floating lock discharge condition.
[Drawing 55] It is the left side view of the stage unit of drawing 1 .
[Drawing 56] It is the top view showing 12cm disk insert/eject detection actuation with the loading roller of drawing 1 , and in (A), a loading initiation condition and (B) show a loading completion condition, and (C) shows the completion condition of ejection.
[Drawing 57] It is the top view showing 8cm disk insertion detection actuation with the loading roller of drawing 1 , and in (A), the insertion condition from a center and (B) show a left-justify insertion condition, and (C) shows a right justification insertion condition.
[Drawing 58] It is the top view showing disk discharge actuation of the ejection arm in the ROWA chassis unit of drawing 1 .
[Drawing 59] The pickup unit of drawing 40 is the top view showing the condition of being in an initial valve position.
[Drawing 60] The pickup unit of drawing 40 is the top view showing the condition of being in a chucking discharge location.
[Drawing 61] It is the flow chart which shows the flow of the housekeeping operation of the disk regenerative apparatus of the gestalt of this operation, and disk selection / playback actuation.
[Drawing 62] It is the flow chart which shows the flow of actuation from disk playback termination of the disk regenerative apparatus of the gestalt of this operation to a disk playback standby condition.
[Drawing 63] It is the flow chart which shows the flow of actuation from the disk playback standby condition of the disk regenerative apparatus of the gestalt of this operation to a disk fetch standby condition.
[Drawing 64] It is the fluoroscopy right side view showing the initial state of the side selection plate shown in drawing 25 .
[Drawing 65] It is the fluoroscopy right side view showing the condition of having aligned the disk holder of the maximum upper case with the disk insertion point, with the side selection plate shown in drawing 25 .
[Drawing 66] It is the fluoroscopy right side view showing the condition of having aligned the disk holder of the bottom with the disk insertion point, with the side selection plate shown in drawing 25 .
[Drawing 67] It is the fluoroscopy right side view showing the condition of having chosen the separation location of a disk holder, with the side selection plate shown in drawing 25 .
[Drawing 68] It is the fluoroscopy right side view showing the condition of having separated the disk holder, with the side selection plate shown in drawing 25 .
[Drawing 69] It is the fluoroscopy right side view showing the condition of having moved the disk holder to the chucking location, with the side selection plate shown in drawing 25 .
[Drawing 70] It is the fluoroscopy right side view showing the condition of having raised the disk holder from the chucking location, with the side selection plate shown in drawing 25 .
[Drawing 71] It is the fluoroscopy right side view showing the condition of having evacuated the disk holder, with the side selection plate shown in drawing 25 .
[Description of Notations]
1 -- The 1st motor
2 -- Gear device
3 -- Mode plate
3a [-- Slit] -- A shaft, 3b-3f -- A grooved cam, 3g -- The press section, 3h
4 5 -- Side selection plate
4a, 5a [-- The horizontal level for evacuation, 4e, 5e / -- A top ramp, 4f, 5f / -- The acute section, 5g / -- Slit] -- A guide slot, 4b, 5b -- The cam groove for division, 4c, 5c -- The cam groove for chucking, 4d,

5d
6 -- Open door link
6a [-- Press section] -- A shaft, 6b -- A pin, 6c -- The engagement section, 6d
7 -- Ejection arm
7a -- A shaft, 7b -- The engagement section, 7c -- Spring
9 -- Stage power link
9a -- A shaft, 9b -- A pin, 9c -- Press section
10 -- ROWA chassis unit
10a -- A chassis, 10b -- The 1st guide pin, 10c -- The 2nd guide pin
11 -- The 2nd motor
12 -- Disk holder elevator style
12a -- The gear train of a driving side, 12b -- Major-diameter gear
13 14 -- Slide plate
13a, 14a [-- The link section, 13e, 14e / -- Pin,] -- A stairway cam, 13b, 14b -- A grooved cam, 13c, 14c -- The engagement section, 13d, 14d
18 19 -- Lock link
18a, 19a -- A shaft, 18b, 19b -- A pin, 18c, 19c -- Engagement section
20 -- Upper chassis unit
20a -- Chassis
21 -- Disk holder
21a [-- A disk hold spring, 21e / -- A projection, 21f / -- A positioning lobe, 21g / -- A guide sleeve, 21h / -- A guide hole, 21i / -- A slide slot, 21j / -- Limb] -- A diaphragm, 21b -- A disk attachment component, 21c -- The hold section, 21d
22 -- Pantograph
22a -- A plate, 22b -- A slide pin, 22c -- Torsion spring
24 25 -- Upper selection plate
24a, 25a [-- A bottom ramp, 24e, 25e / -- Pin] -- A rack, 24b, 25b -- A lateral portion, 24c, 25c -- A top cam, 24d, 25d
30 -- Stage unit
30a [-- A support plate, 30f / -- Slit] -- A stage, 30b -- A pin, 30c, 30d -- A stage gear, 30e
31 -- The 3rd motor
32 -- Gear device for a level drive
32a [-- The gear train between stage gears, 32e / -- A connection gear, 32f / -- An idler plate, 32g / -- Pin 32g] -- The gear train by the side of a motor, 32b -- An idler gear, 32c -- The gear train by the side of a guide shaft, 32d
33 -- Loading roller
33a -- A right pinion, 33b -- Left pinion
34 -- Guide shaft
35 -- Drive plate
35a [-- Spring] -- A guide slot, 35b -- A suppressed area, 35c -- A grooved cam, 35d
35e -- Press plate
36 -- Stock arm
36a -- A shaft, 36b -- Press section
37 -- Upper disk guide
38 -- ROWA disk guide
38a -- A pivot, 38b -- A spring, 38c -- ROWA roller
39 -- Switch plate
39a -- Press section
40 -- Drive base unit
40a -- The drive base, 40b -- Guide rail
41 -- The 4th motor

42 -- Gear device for a pickup drive
43 -- Leading screw
43a -- A lead shaft, 43b -- A communication shaft, 43c -- Press section
44 -- Pickup unit
45 -- Turntable
46 -- Spindle motor
47 -- Rack plate
47a -- Rack section
48 -- Position spring
50 -- Shutter unit
50a -- Front panel
51 -- Disk insertion opening
52 -- Shutter
53 -- Door plate
53a -- A guide slot, 53b -- Pin
54 -- Door link
54a [-- Spring] -- A guide slot, 54b -- A rise-and-fall slot, 54c -- An engaged portion, 54d
60 -- Damper unit
61 62 -- Damper plate
61a, 61b, 62a, 62b -- Lock section
63 -- Damper
64 -- Damper spring
72 -- Switch plate
72a -- A shaft, 72b -- A pin, 72c -- Press section
86 -- Position plate
86a -- A notch, 86b -- Regulation pawl
91 -- Screw holder
91a -- A vertical panel, 91b -- A horizontal plate, 91c -- Engagement projection
92 -- Screw holder spring
93 -- Flat spring
94 -- Disk hook
94a [-- A chucking sleeve, 94e / -- Spring] -- A claw part, 94b -- A suppressed area, 94c -- The supporting point, 94d
95 -- 1st chucking arm
95a [-- Slot] -- A shank, 95b -- An engaged point, 95c -- A slant surface part, 95d
96 -- 2nd chucking arm
96a [-- A slant surface part, 96e / -- Spring] -- A shank, 96b -- An engagement hole, 96c -- The engagement section, 96d
97 -- Adapter
97a -- Projection part
SW 1-8 -- Switch
PHs 1-7 -- Photosensor
101 or less -- Each step of a procedure

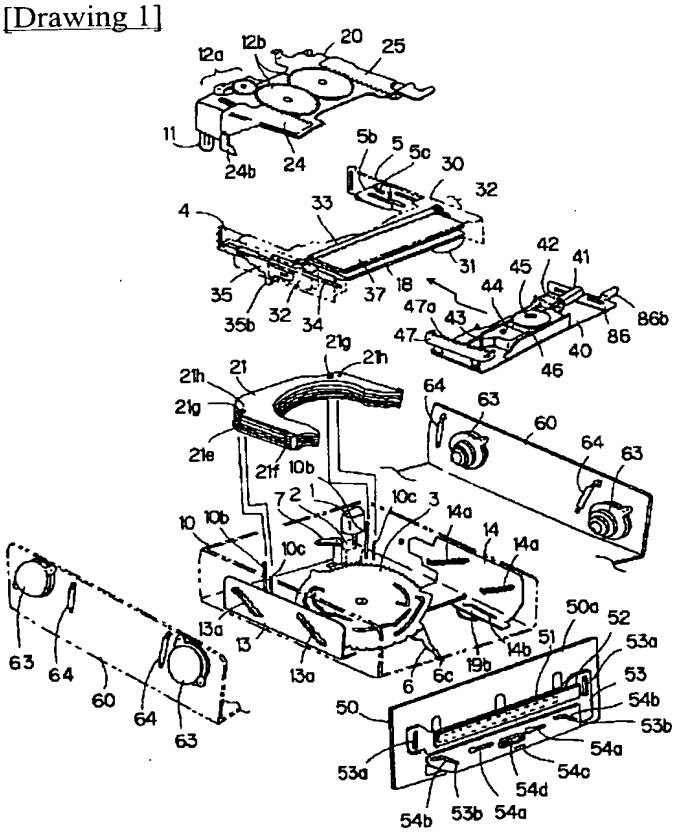
[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



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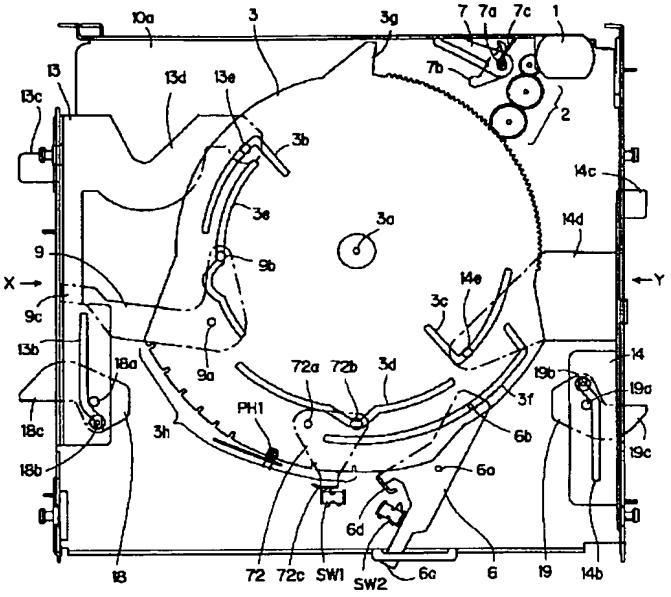

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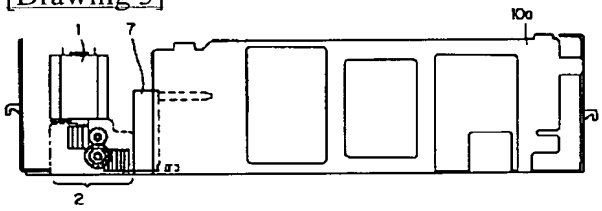

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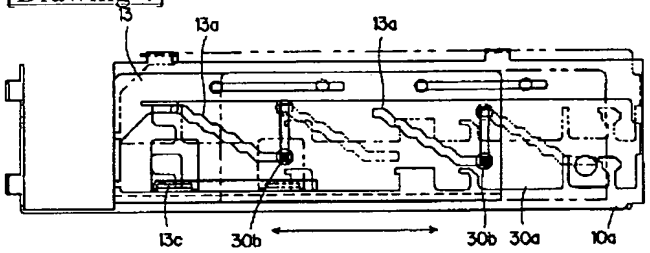

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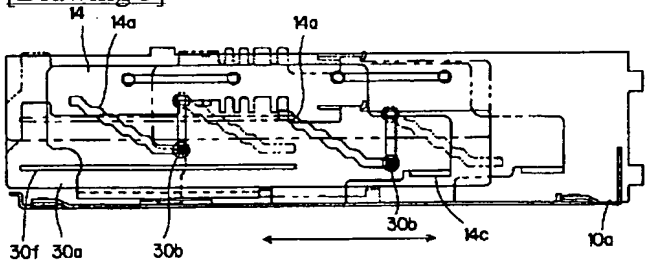

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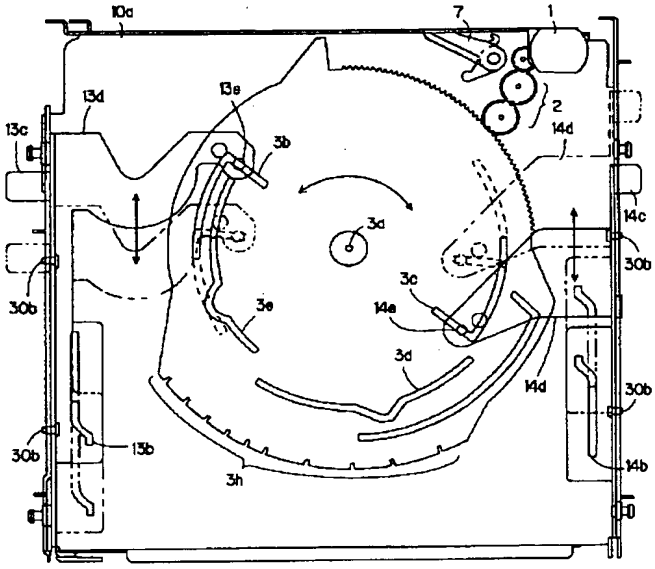

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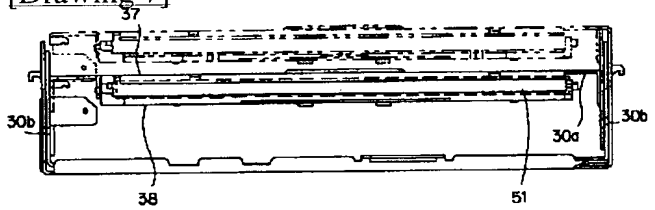

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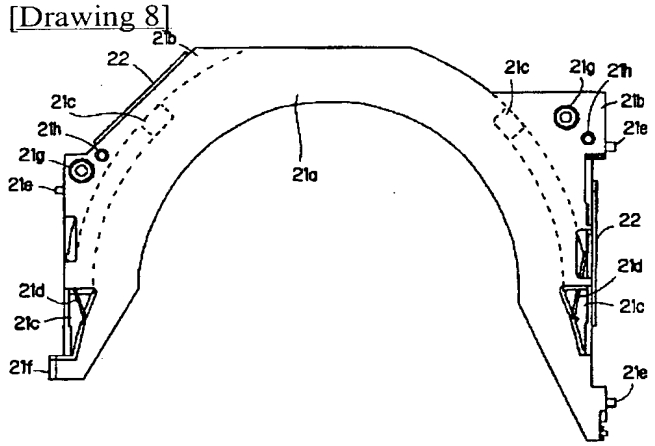

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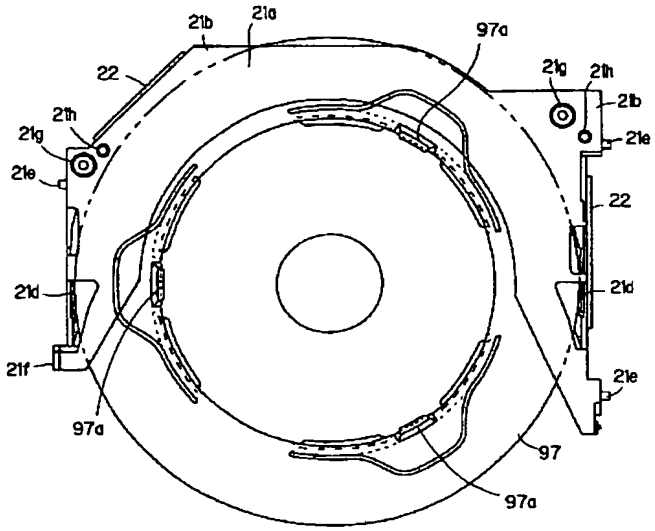

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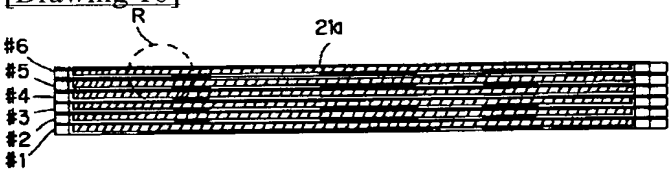

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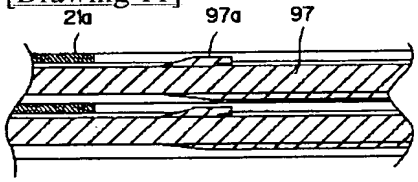

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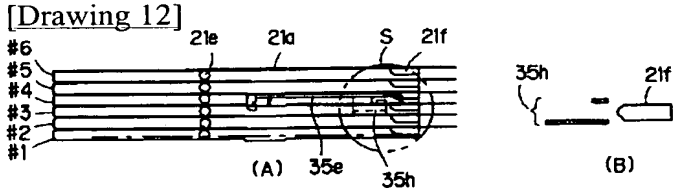

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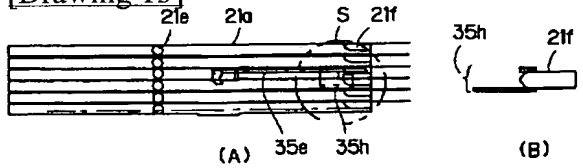

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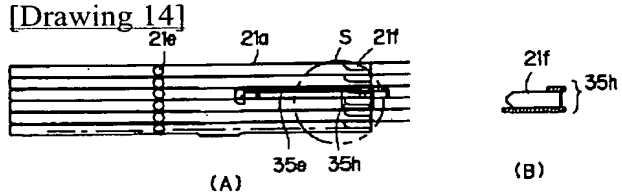

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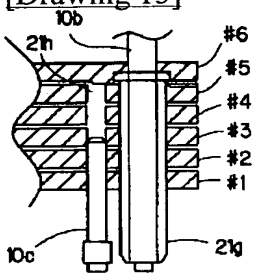

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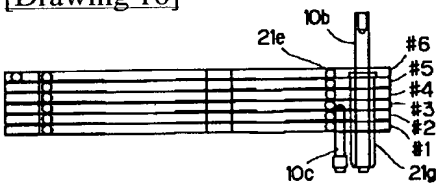

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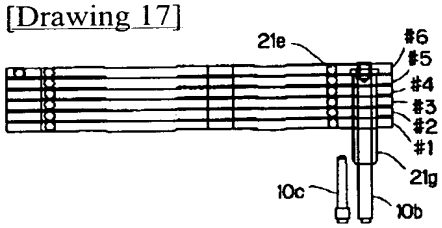

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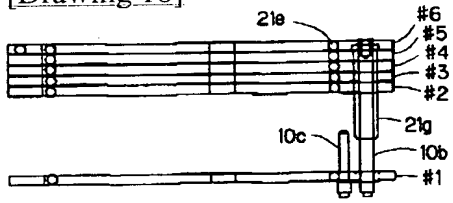

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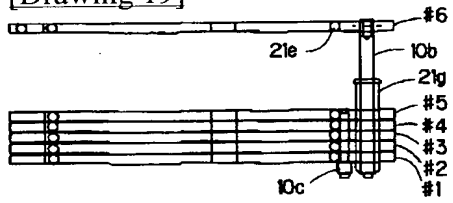

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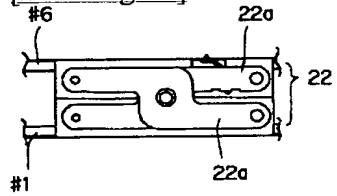

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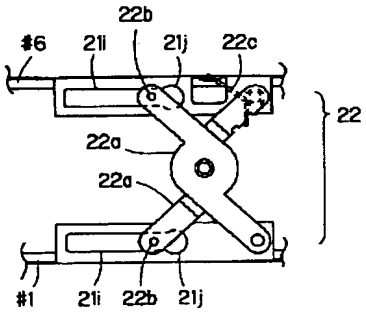

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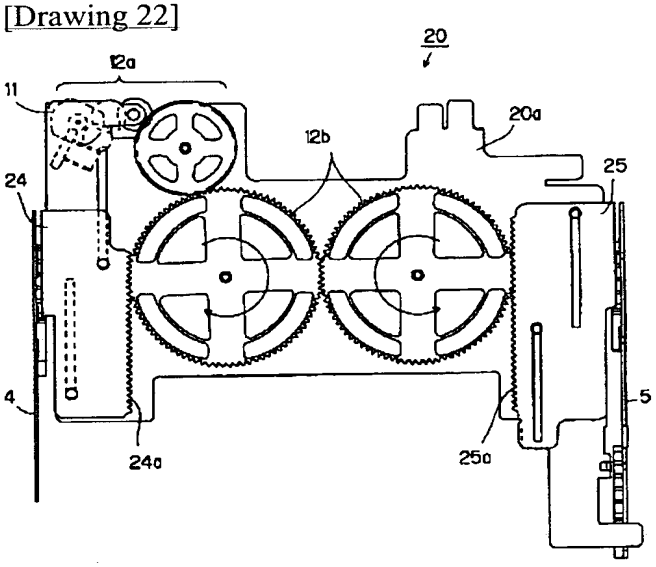

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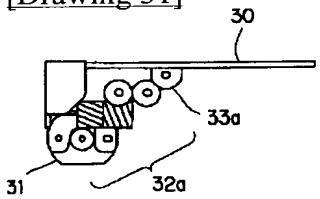

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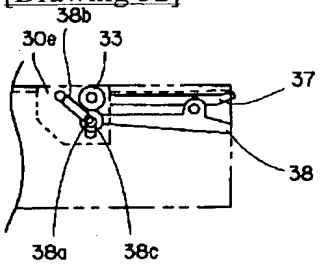

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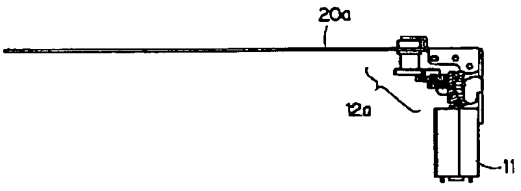

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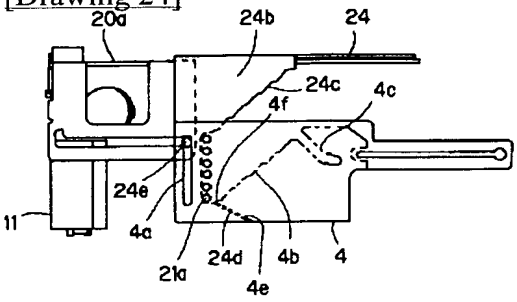

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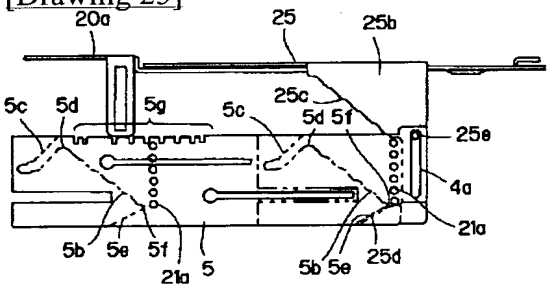

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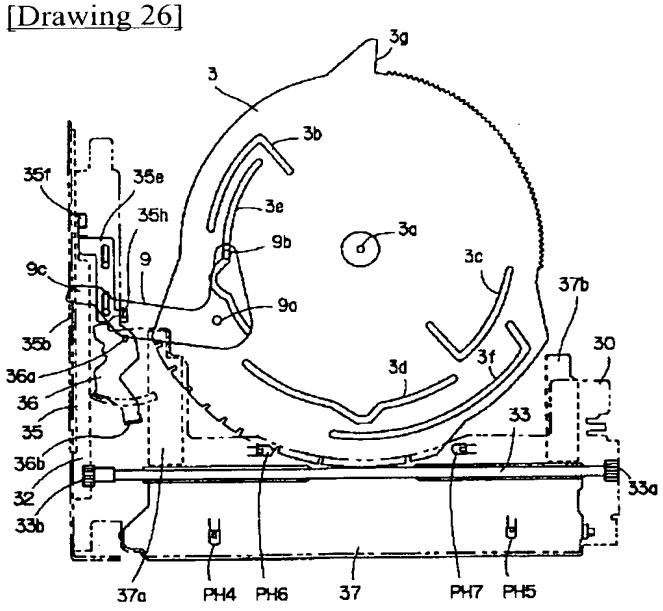

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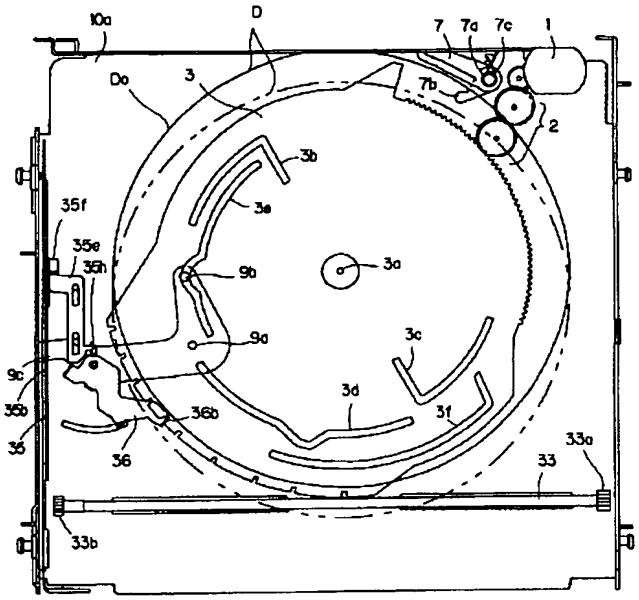

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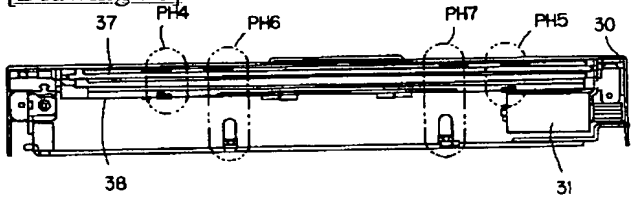

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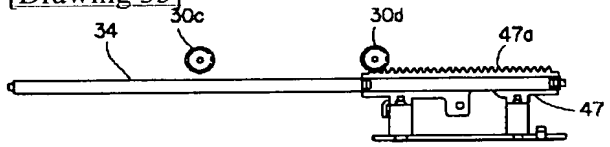

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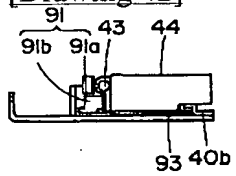

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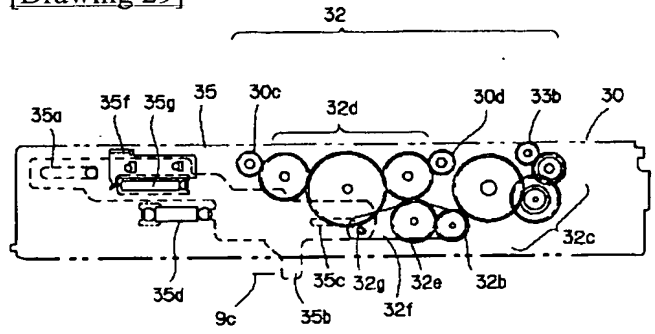

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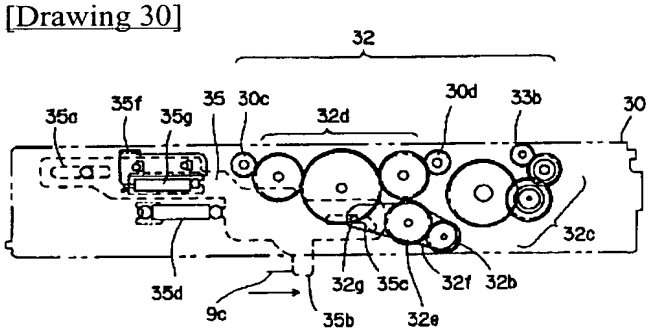

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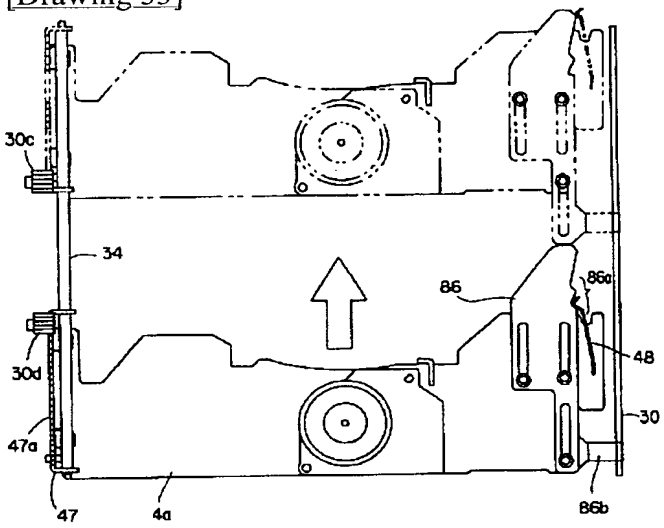

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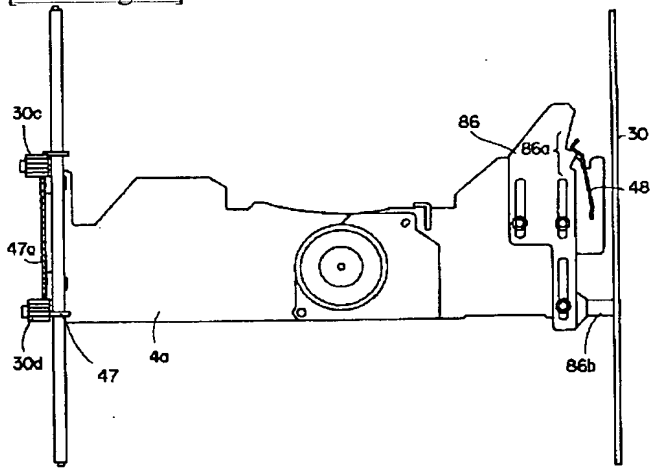

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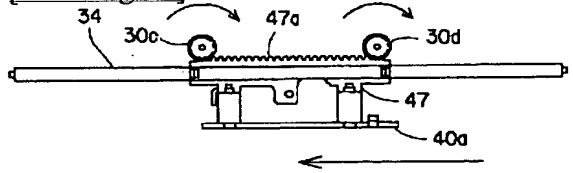

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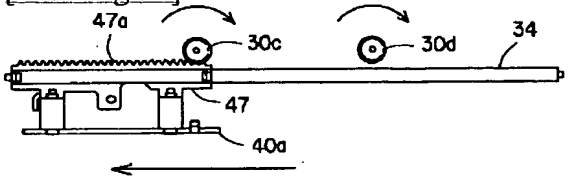

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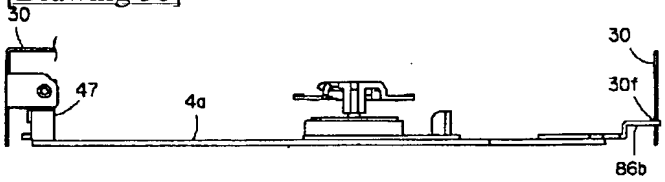

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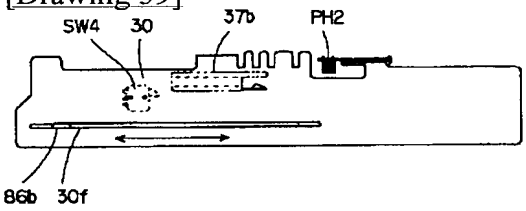

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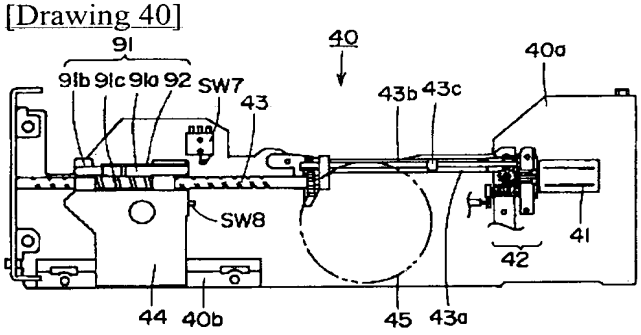

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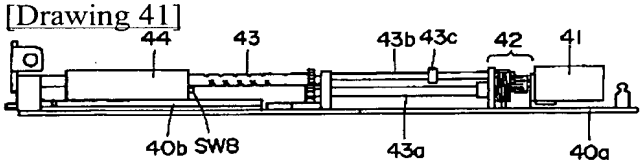

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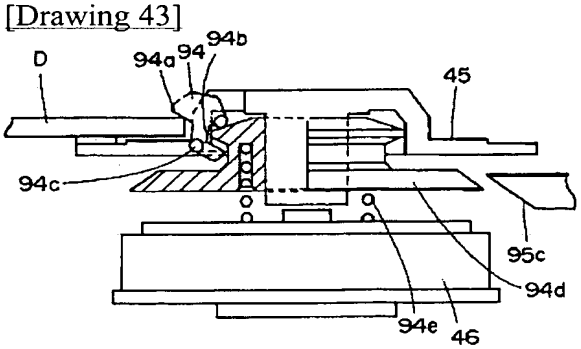

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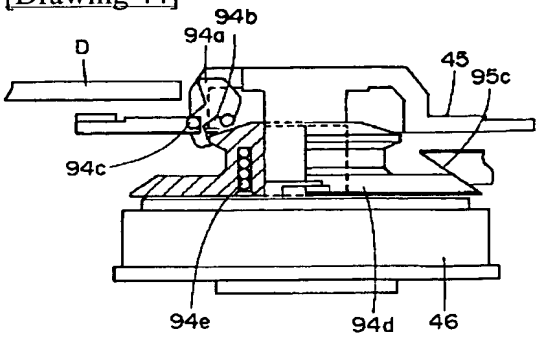

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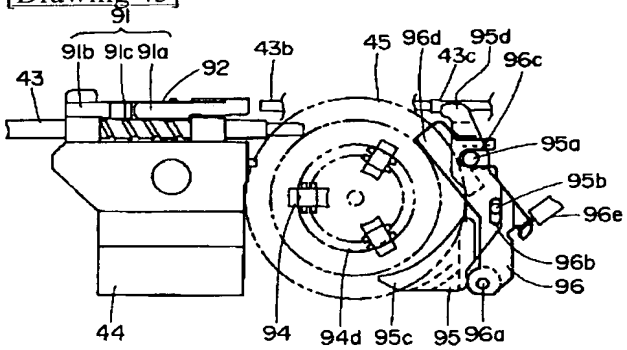

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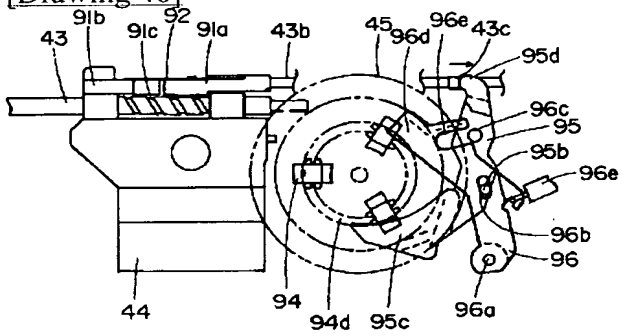

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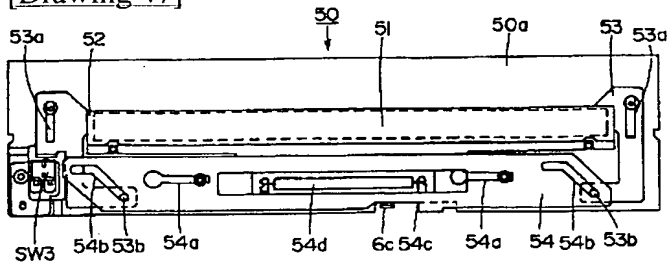

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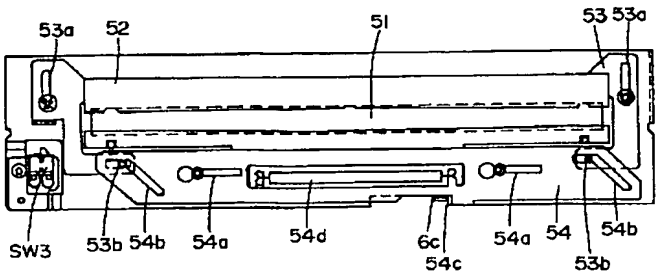

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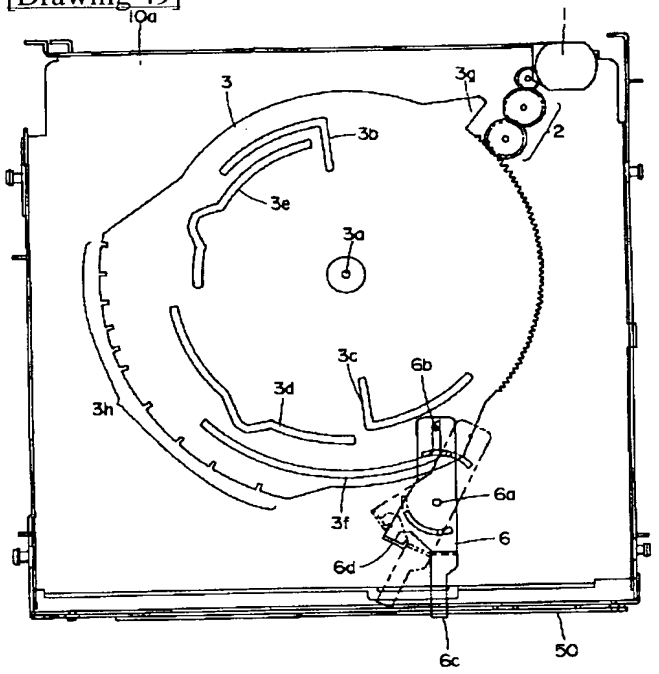

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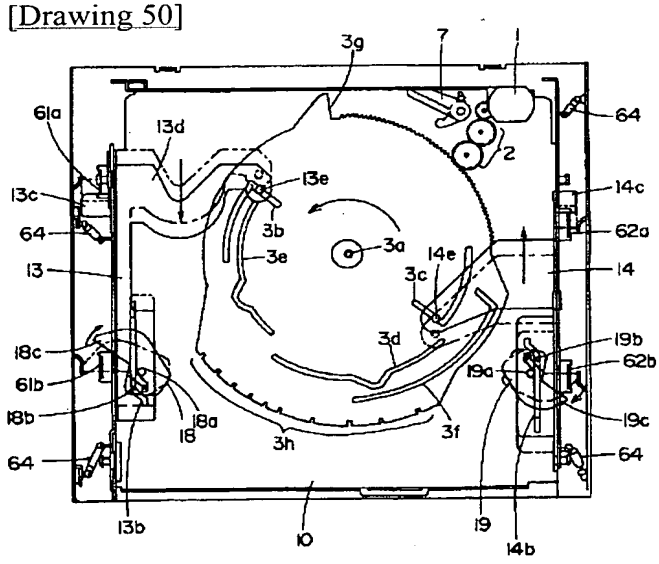
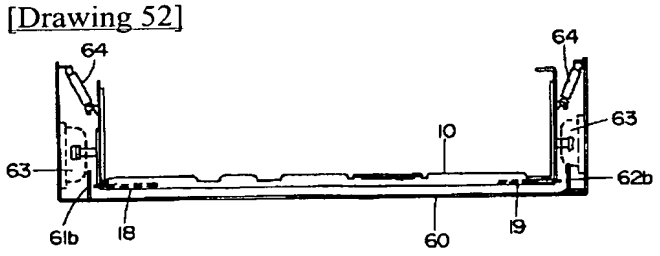


[Drawing 51]

[Drawing 52]



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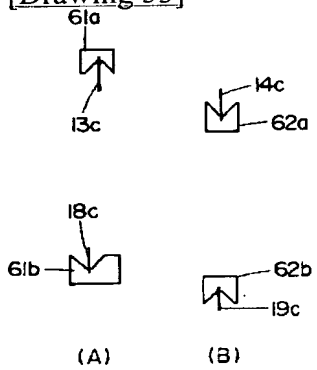

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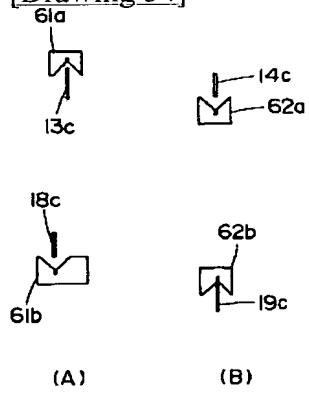

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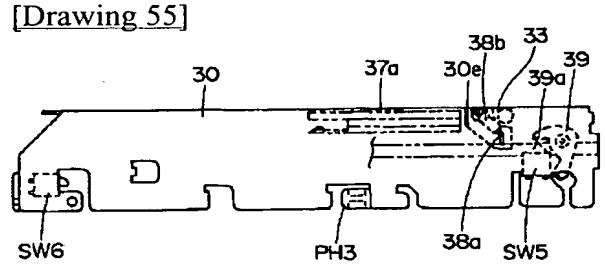
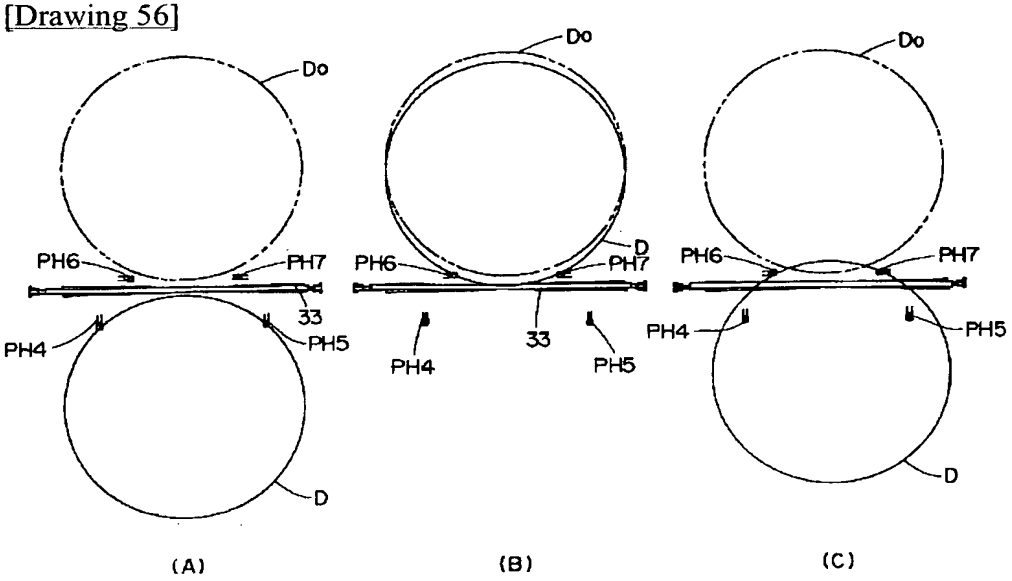
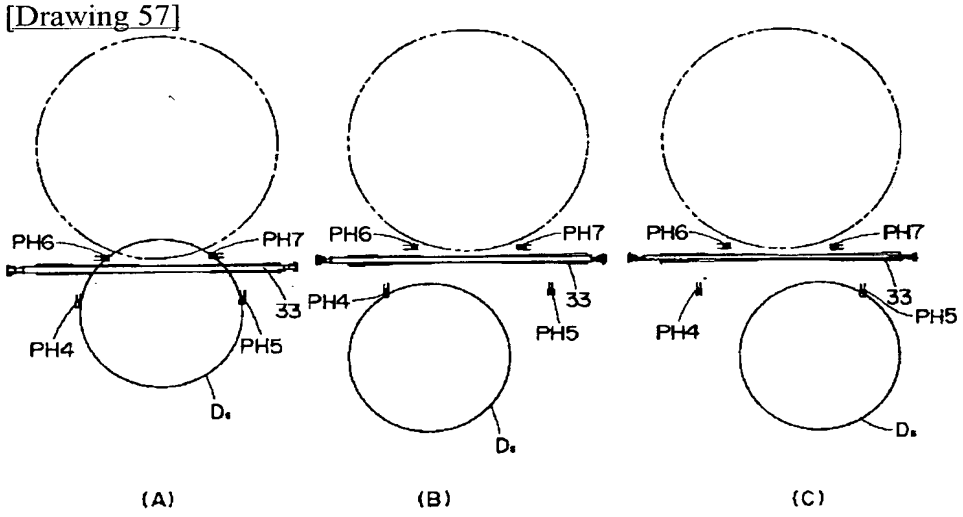


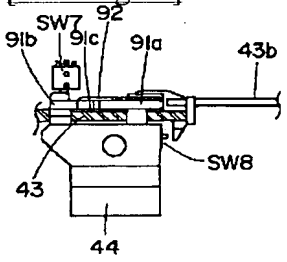
[Drawing 56]



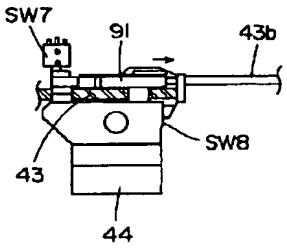
[Drawing 57]



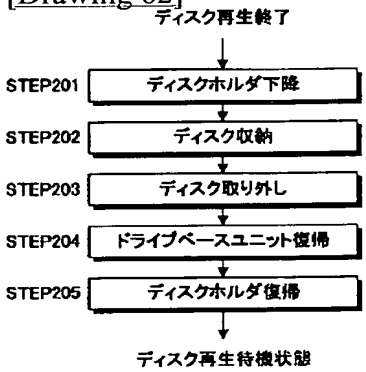
[Drawing 59]



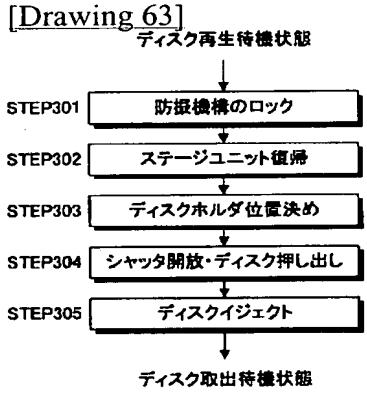
[Drawing 60]



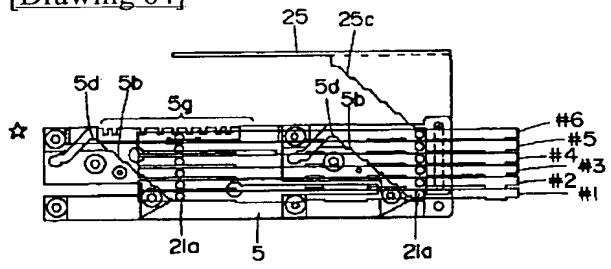
[Drawing 62]



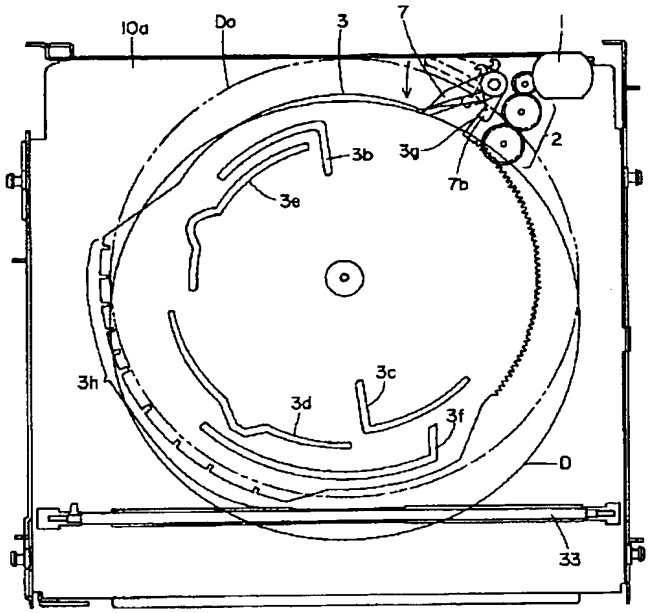
[Drawing 63]



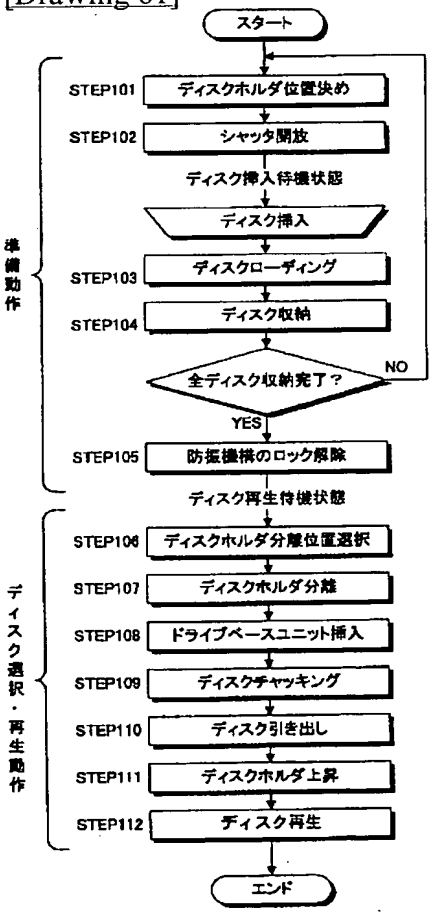
[Drawing 64]



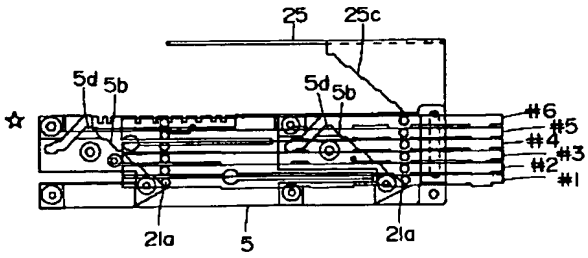
[Drawing 58]



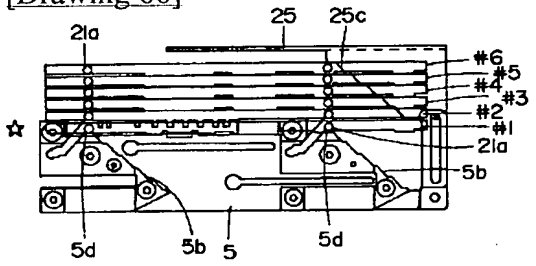
[Drawing 61]



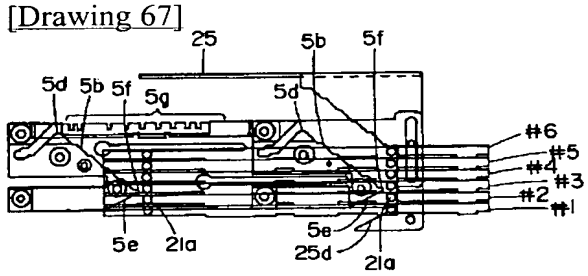
[Drawing 65]



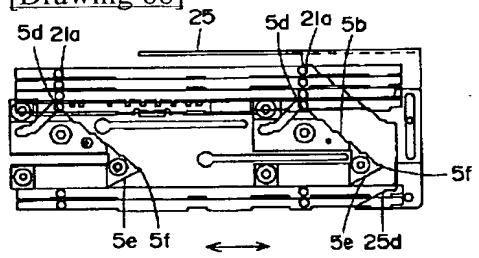
[Drawing 66]



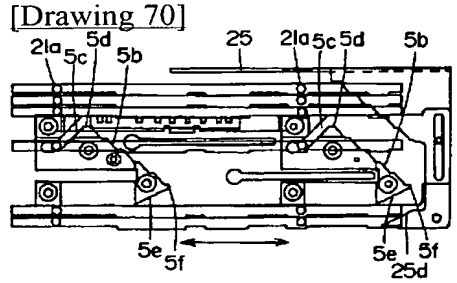
[Drawing 67]



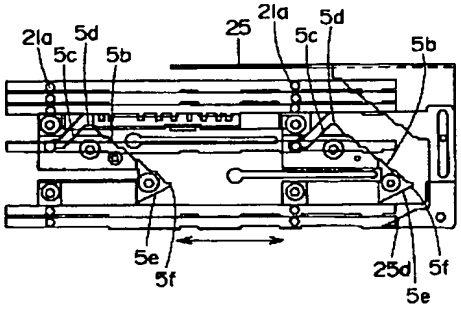
[Drawing 68]



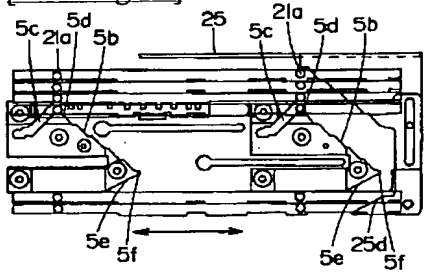
[Drawing 70]



[Drawing 69]



[Drawing 71]



[Translation done.]